

In This Issue—*The N. A. D. A. Convention*

MOTOR AGE

Vol. XLV
Number 6

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CHICAGO, FEBRUARY 7, 1924

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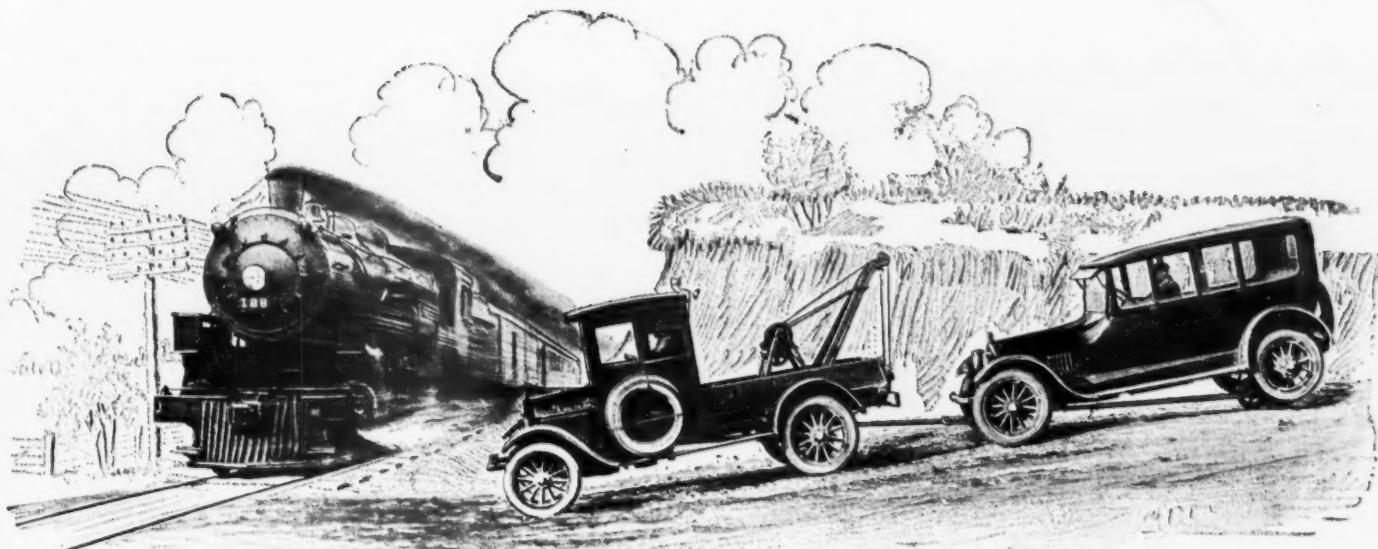
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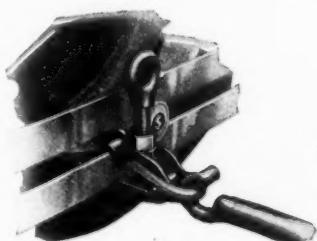
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MOTOR AGE

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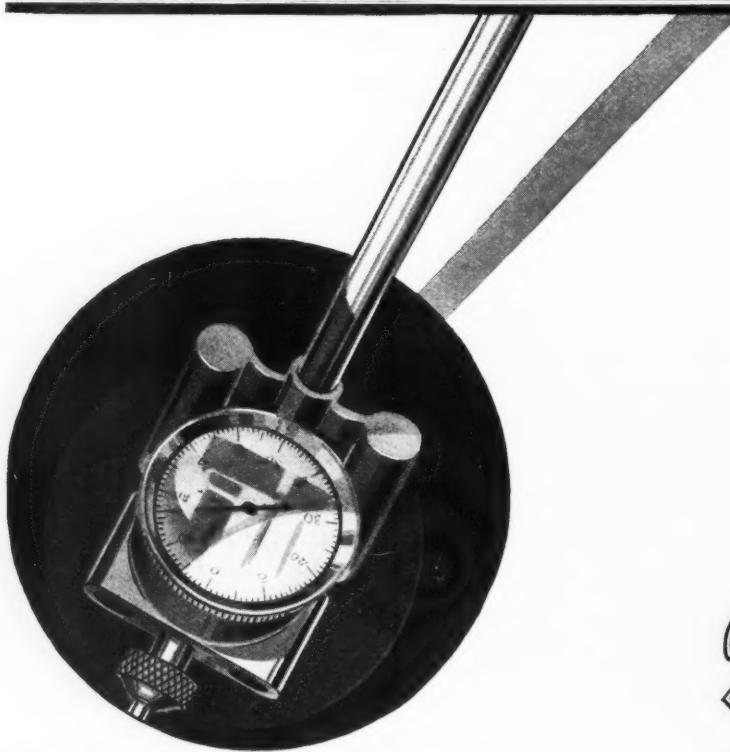


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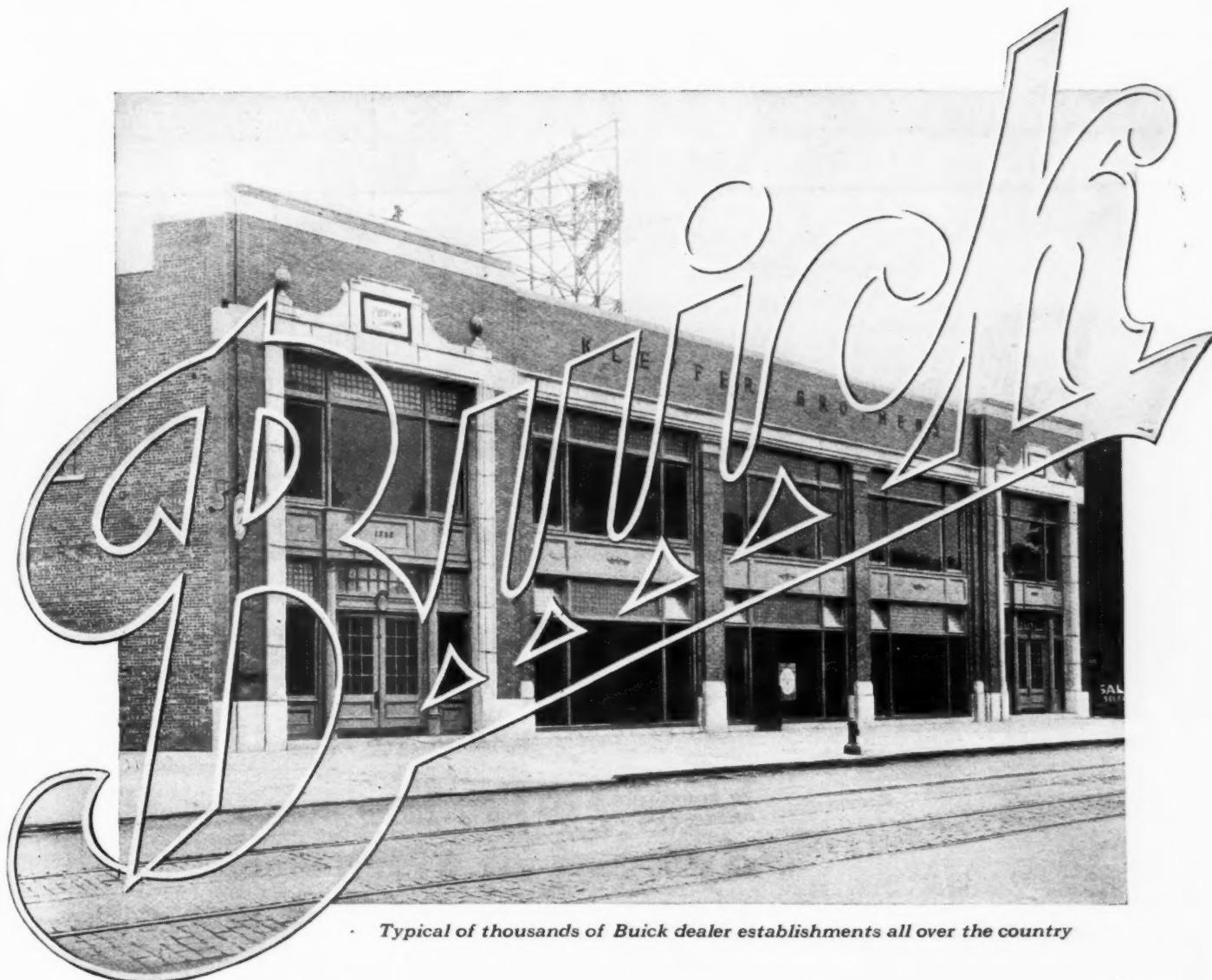
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Pioneer Builders of Valve-in-Head Motor Cars

Branches in All Principal Cities—Dealers Everywhere

WHEN BETTER AUTOMOBILES ARE BUILT, BUICK WILL BUILD THEM



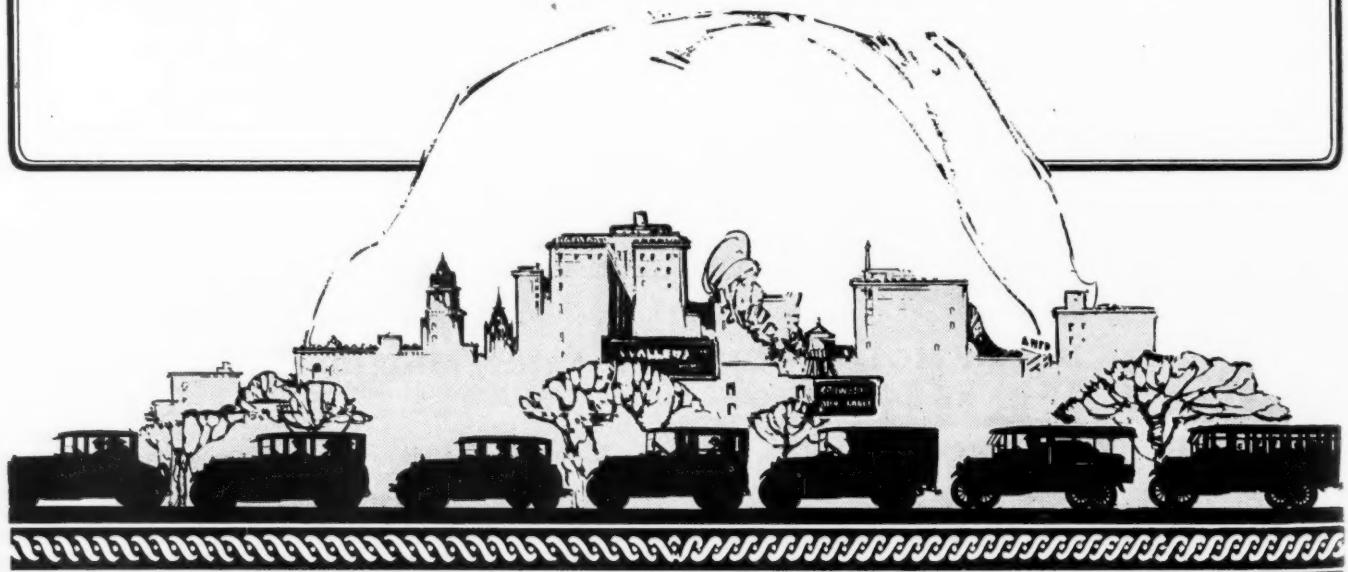
Reo dealers can sell motor~transportation in all its phases, —

*because the Reo line comprises
a product for every condition
of motoring or motor~hauling.
The world's most complete line.*

*Promptness is necessary in
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Passenger Cars
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MOTOR AGE



N. A. D. A.

Above, left to right: C. E. Gambill, Gambill Motor Co., Chicago, first vice president; John A. Butler, Butler Motor Co., Kansas City, new president of the N. A. D. A.; C. B. Warren, Warren-Nash Co., New York, second vice president



New Era Dawns for National Automobile Dealers' Association

Intense Interest Shown in This Year's Convention With Largest Attendance on Record—Progressive Steps Include Lower Membership Fee and Educational Plan

Five per cent net profit in 1924.

A larger and more representative membership.
Educational work to be carried on through a new district organization plan.

Continued study of used car facts and methods employed to eliminate loss in buying and selling them.

These are among the steps forward taken by the National Automobile Dealers' Association at its seventh annual convention held at the LaSalle Hotel in Chicago on Tuesday and Wednesday of the Twenty-fourth Annual Chicago Automobile Show.

Above: W. V. Harrington, Harrington Motor Co. of Minnesota, a director. Below: Tom Botterill, Tom Botterill, Inc., Denver, a director



Above: John L. Bovis, Bovis Oldsmobile Co., Cincinnati, a director. Below: R. H. Martin, Martin-Nash Co., Atlanta, a director

This convention, by far the most successful in the history of the N. A. D. A., marked the turning point on its road to success as an important business institution. With a membership of more than 800 of the most substantial firms engaged in the distribution and retailing of twentieth century transportation, the world's greatest business, the organization has emerged from its days of infancy and assumed the stature of a full grown man, strong and powerful and with a will to develop into a still greater institution of service to the automotive merchandiser.

In striking contrast to the struggling years of the organization's earlier life, the convention this year witnessed an attendance of not less than 400 earnest dealers at every session. Not longer than a year ago some of the sessions mustered hardly half a hundred, including association secretaries and business paper editors. In the total registration this year of more than 600, of whom slightly less than half were members, there was seen an indication of an era of rapid growth for the N. A. D. A.

New Membership Plan

Realizing that with the structure now firmly established it must expand its membership in order to increase its usefulness, the directors adopted a new plan of membership. They decided to establish a new minimum fee of \$25 instead of the old minimum of \$50, thus opening up the opportunity to a vast number of smaller, but sound, dealers to contribute to the success of the N. A. D. A. and enjoy its benefits.

The thought that automotive merchants should net not less than five per cent in order to enjoy a profit commensurate with their volume of business and capital invested pervaded the convention. Speeches were made about it and the practicability of its realization brought courage and confidence to the entire convention. The idea was advanced and ably championed that the motor car dealer will help himself to make "five per cent net" by turning his establishment into a general automotive merchandising organization where all the needs of the motoring public can be supplied.

The new basis of membership fees is based on the total annual volume of



Warren E. Griffith, Landman-Griffith Co., Toledo, O. Toastmaster at the 7th Annual N. A. D. A. Frolic

business done, as follows:

Up to \$250,000.....	\$ 25
\$250,000 to \$500,000.....	35
\$500,000 to \$750,000.....	75
1,100,000 to \$1,500,000.....	100
\$1,500,000 to \$2,000,000.....	150
\$2,000,000 to \$2,500,000.....	200
More than \$2,500,000.....	250

To assist in carrying out the membership and educational plans it was decided to divide the country into 25 districts with a director from each. Each district will have its membership quota and the director will help to enroll the required number.

The district organization also will assist in the educational campaign, the moving spirit of which will be General Manager C. A. Vane. Vane has been instrumental in developing the present N. A. D. A. program and has won the gratitude of the entire membership and many dealers who are not members by the many services he has rendered the industry. It is planned to hold a two day meeting in each district, subjects including sales, service and accounting.

Although the used car was the basis of a considerable portion of the convention program, the N. A. D. A. did not take a stand in favor of any particular method of dealing with the problem. It wisely took the stand that it would continue to gather all the information available on the handling of used cars and pass it on to the membership.

The election of John A. Butler, Dodge

Brothers dealer at Kansas City, as president, marked the third year that the administration of the N. A. D. A. has been in the hands of a Missourian, two of the former presidents having come from that state. F. W. A. Vesper, the association's first president and still one of its strongest supporters, is Buick distributor at St. Louis, and W. J. Brace, who was president in 1922, is Hudson-Essex dealer in Kansas City. Mr. Butler succeeds G. G. G. Peckham as president. Mr. Peckham is head of the Ohio Buick company at Cleveland. Mr. Butler was advanced to the presidency from the office of first vice-president and C. E. Gambill of the Gambill Motor Co., Chicago, was moved up from second vice-president to first vice-president. C. B. Warren of the Warren-Nash Co., New York, was elected second vice-president.

Two hundred and twenty-five of the Association's more than eight hundred members registered, and the total registration was more than six hundred, including many substantial non-member dealers who are likely to affiliate now that the dues have been decreased for men operating smaller businesses.

The Convention opened with a report, more in the nature of an informal address, by General Manager Vane, reviewing the Association's educational campaign of the past year, which has been directed toward assisting dealers in developing profit-making business methods. Mr. Vane said that the N. A. D. A. work throughout 1924 would be aimed at achievement of a five per cent minimum net profit by the dealers of the country.

Conceding that the building of 4,000,000 cars and trucks in 1923 was a brilliant achievement for the industry, Mr. Vane said that the selling of them was a much greater accomplishment. The accomplishment was made even greater than the figures themselves would seem to indicate by the fact that in marketing this great volume of new cars, the trade also sold in 1923 more used cars than the entire production of new cars in 1922.

Vane Makes Report

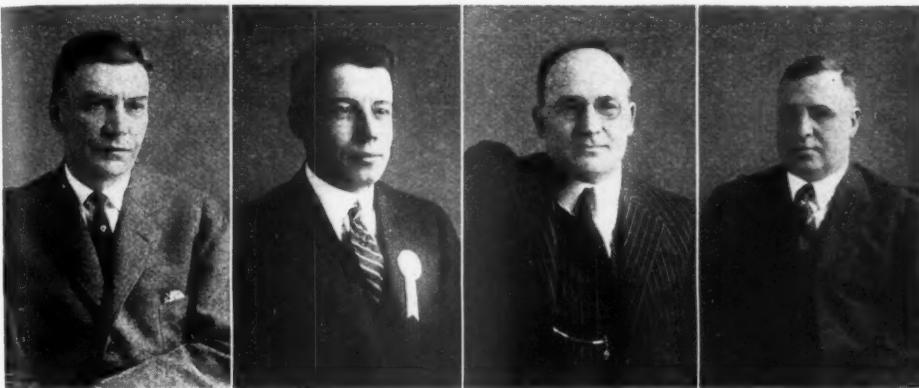
Mr. Vane presented figures showing that the average gross cost of all merchandise, including used cars, handled by the average dealer was 84 per cent,



From left to right: Harrison R. Brown, Central Iowa Motors Co., Des Moines; H. M. Fancher, Secy. and Treas., Tom Botterill, Inc., Denver; L. E. Titus, Olympia, Wash.



Executive staff of the N. A. D. A. From left to right, P. F. Drury, Asst. Gen. Mgr.; Lynn M. Shaw, asst. gen. mgr.; C. A. Vane, gen. mgr.



From left to right: E. V. Stratton, Stratton Motors Co., Albany, N. Y.; J. H. Collins, mgr. Research Dept., Chilton Co.; Al Reeke, Reeke-Nash Co., Cleveland; Dean Schooler, Schooler Oakland Co., Des Moines

leaving only 16 per cent gross profit, out of which an average net of 3 per cent has been made. He declared that it should be possible to make a net of at least 5 per cent and in many cases more than that, and that every dealer should make, "A five per cent net profit minimum," his watch-word for 1924.

G. G. G. Peckham, President of the N. A. D. A. during 1923, and President of the Ohio Buick Company of Cleveland, made a brief address as the retiring chief of the organization. From his own experience and observation, he confirmed every statement made during the convention that passenger car dealers are becoming more and more general automotive merchants.

One of the most informative addresses delivered before the Convention was the chart-illustrated talk of J. H. Collins, Manager of the Research Department of the Chilton Company. He showed that lower prices and competition were cutting down the dealers' profits on passenger car sales, and he recommended that this condition be met by more intensive and intelligent merchandising of automotive equipment and supplies.

Using charts of contrasting colors which graphically illustrated the points in his talk, Mr. Collins discussed developments of the past five years, as they have affected dealer profits.

Charts Show Automotive Development

Mr. Collins first pictured the increase in dealerships since 1919, showing that the Ford dealer list had increased only 27 per cent as compared with a 44 per cent increase in the number of dealers handling cars other than Fords. This had happened, he stated, while the ratio of Ford production to production of other cars had remained virtually constant, thus establishing the fact that there has been greater intensification of competition in the non-Ford field. He then showed that trade units in the field, including dealers, garagemen and supply stores, had increased 49 per cent in number during the five year period, while gross business had increased only 41 per cent, again emphasizing the fact that the business available is being spread more thinly.

Using further charts, Mr. Collins

showed that the Ford dealers' average car sales had increased from approximately \$50,000 in 1919 to \$76,000 in 1923, an increase of 52 per cent, while average car sales of other dealers which were \$58,000 in 1919, had dropped to \$54,000 in 1923, a decrease of 8 per cent. For last year only, Ford sales per dealer increased 15 per cent and sales of other cars per dealer 12 per cent. On the other hand, the average sales per dealer of all automotive products had increased from \$62,000 in 1919 to \$92,000 in 1923, the chart showed.

Mr. Collins emphatically stated his opinion that operation of general automotive merchandising organizations rather than mere car sales agencies pointed "the way out," as he termed it, from the dilemma created by coincident price reductions and multiplication of dealers.

Analyzing the businesses of car and truck dealers, Mr. Collins showed that in 1919 56 per cent of their gross sales were of new cars and trucks, while in 1923 the percentage had dropped below 50 per cent. He also showed that during the past five years motor vehicle sales



G. G. G. Peckham, Ohio Buick Co., Cleveland. President of N. A. D. A. in 1923

in dollar volume have increased 26 per cent, while sales of maintenance and operation materials and labor had increased 90 per cent. This strikingly illustrated the change in the market and the dealers' opportunity for fair profits, he said.

Other figures showed how car dealers largely had overlooked the opportunity in accessories and supplies. During the five year period, the number of car dealers had increased 10 per cent and the number of other trade units, dealing almost exclusively in maintenance and operation supplies and labor, 100 per cent. Car dealer service stations also had increased only 10 per cent, while independent stations had gained 110 per cent in the five years.

Mr. Collins said that the car dealer, having first chance at the car purchaser, should sell the additional equipment and supplies needed at the time the car is bought, and should also cultivate the owner's future business in merchandise and labor incident to the operation of his car. It is only natural, he said, that the car owner should return to the merchant from whom he bought his car for additional service, if he is given the opportunity.

5,600,000 Estimated Production Capacity

Mr. Collins estimated production capacity of passenger car and truck factories now equipped and under construction, at 5,600,000, and said that while it could not be expected that an attempt would be made to produce at capacity during 1924, it must be conceded that most of the manufacturers would want to make the fullest possible use of their production facilities.

As a solution of the difficulties besetting the dealer, Mr. Collins recommended co-operation between the sound and reputable institutions in business in their local territories, and through organizations such as the N. A. D. A. He re-emphasized that profit would come from understanding and practicing the idea of general automotive merchandising, with businesses departmentized, and each department standing on its own feet.

"Five Per Cent Net," the address which C. E. Gambill, vice-president of the N. A. D. A., has been making at district meetings of the association throughout the year, and which has been reviewed in previous issues of MOTOR AGE, was another who commanded the close attention of the big convention audience.

Mr. Gambill is head of the Gambill Motor Car Co., Hupmobile distributor in Chicago.

Mr. Gambill also urged every dealer to organize his business as a general automotive mercantile establishment. He listed the things which must be done to assure a minimum net profit of 5 per cent. The points are summarized below:

1. Get more work out of salesmen. Mr. Gambill said that dealers should study the work of their salesmen and direct them in planning and routing calls so that men would waste less time traveling and waiting, and have more time to



F. L. MacFarland (left), MacFarland Auto Co., Denver; W. E. Dinneen (right), W. E. Dinneen Garage Co., Cheyenne, Wyoming

spend with prospects.

2. Used cars. The speaker said that dealers cannot expect to buy used cars right unless they develop their salesmen as first class merchandisers of new cars. Thoroughly and convincingly selling a new car was a necessary preliminary, he said, to buying a used car at a price in keeping with its value.

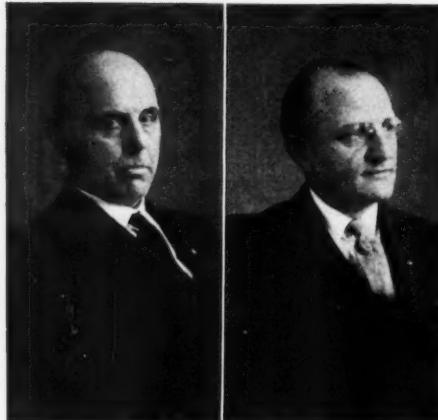
3. Flat rate and piece work. Mr. Gambill said that this combination, which has been repeatedly discussed in detail in MOTOR AGE, assures profit in a well managed shop. To pave the way for successful operation of flat rate, and particularly of piece-work, compensation for mechanics, the speaker said the men in the shop should be taken into the dealer's confidence, and shown the meaning of overhead costs, otherwise they are liable to think that the dealer's gross profit, which they may believe is equivalent to net profit, is out of proportion to their wages.

4. Accounting. The speaker declared that every dealer establishment should have a thorough accounting system, which he termed the barometer of a business.

Factory Policies Explained

A unique feature of the dealer convention was the appearance of a manufacturer's representative to explain the dealer policies of his company. The speaker was Charles F. Jennings, assistant sales manager of Dodge Brothers. Mr. Jennings gave a frank and free statement of Dodge Brothers manufacturing, sales and service policy. He emphasized that while the manufacturer recommended a number of things to dealers, there was one thing that dealers must do, and that was to make a profit. The company's policies, he stated, were directed toward assuring this dealer profit, with reasonable co-operation on the part of the dealer.

Mr. Jennings said that Dodge Brothers had started out with the main ideal of honesty in the building and selling of the car. When the building of a dealer organization was undertaken, the chief object was to develop a stable and permanent organization, and he mentioned the fact that more than 50 per cent of the company's early dealers were still selling the car. He said that the sales



J. Burton Arbuckle, The Arbuckle Co., Erie, Pa. President Pennsylvania Automotive Assn.; W. J. Brace, Hudson-Brace Motor Co.; Kansas City. Former president N. A. D. A.

department had always regarded its job as one, not of selling cars, but of selling business methods of merchandising.

He told about the Dodge Brothers' "Common Sense" books, published during the last few years—one devoted to service and sales, one to used cars, and one to cost and accounting. Back of the cost and accounting book, he said, was the Dodge Brothers' uniform accounting system, which a large number of its dealers are now using, and which it was desirable to have installed in the business of every Dodge Brothers dealer, first because the system was correct and especially adapted to this type of business, and second, because its use enabled the manufacturer more readily to co-operate with the dealer in the conduct of his affairs.

The convention had a notable diversion during the first day's session in an address on Salesmanship, by a man who was a student of selling, an eloquent speaker, and a talented actor, all in one. The man was William Burrus, a sales consultant, of Kansas City. His subject was "Shakespeare as a Salesman," and before the address was over the audience had been treated to a dramatic recital of Marc Antony's funeral oration from "Julius Caesar," with its climaxes interpreted from the salesmanship standpoint.

The second day at the N. A. D. A. convention was given over largely to the used car, which dealers everywhere regard as the principal obstacle in the way of adequate profits. It was announced that the association would continue this year its studies of used car stocks and losses such as have been made periodically during the past two years; also that tives in the manufacturing field also were guests.

Speakers in the used car forum included James E. Appleby, the author of the Appleby plan, and a member of the Percy Chamberlain Associates, Inc., Detroit, which is installing this plan in numerous cities throughout the country and supervising its operation.

R. H. Martin, president Martin-Nash Co., Atlanta, described the statistical plan operated with considerable success in the southern metropolis, announced that the Atlanta dealers had just taken on the Appleby plan, but that collection and dissemination of used car selling prices would be continued as before.

R. J. Schmunk, president of the R. J. Schmunk Co., Hudson-Essex distributor in Cleveland, told about four months' of operation of the Cleveland plan.

New Officers of the N. A. D. A.

President, John A. Butler, Dodge Bros.
First Vice-President, C. E. Gambill, Hupmobile.
Second Vice-President, C. B. Warren, Nash.
Treasurer, F. W. A. Vesper, Buick.

Directors

1st District.....	To be filled.	
2nd District.....	Russell P. Taber.....	Hartford .....Reo
3rd District.....	H. A. Bonnell.....	Newark .....Dodge
4th District.....	Jack Cramer	Buffalo .....Dodge
5th District.....	Jos. G. Roberts.....	Philadelphia .....Nash
6th District.....	Rudolph Jose	Washington, D. C. ....Cadillac
7th District.....	R. H. Martin.....	Atlanta .....Nash
8th District.....	Fred L. Dennis.....	Pittsburgh .....Studebaker
9th District.....	G. G. G. Peckham.....	Cleveland .....Buick
10th District.....	John L. Bovis.....	Cincinnati .....Oldsmobile
11th District.....	W. V. Harrington.....	Minneapolis .....Hupmobile
12th District.....	Jesse A. Smith.....	Milwaukee .....Hudson
13th District.....	To be filled.	
14th District.....	J. T. Stewart.....	Omaha .....Hupmobile
15th District.....	To be filled.	
16th District.....	Geo. O. Wildhack.....	Indianapolis .....Reo
17th District.....	G. W. Jones.....	Des Moines .....Hudson
18th District.....	Geo. T. Bishop.....	Shreveport .....Dodge
19th District.....	Frank A. Winerich.....	San Antonio .....Studebaker
20th District.....	P. H. Greer.....	Los Angeles .....Maxwell-Hupmobile
21st District.....	Wm. L. Hughson.....	San Francisco .....Ford
22nd District.....	W. L. Eaton.....	Seattle .....Dodge
23rd District.....	Tom Botterill	Denver .....Hudson
24th District.....	To be filled.	
25th District.....	To be filled.	



Practicability Outstanding Feature of Present Day Accessories and Shop Equipment. Advancement of Enclosed Type of Body Has Brought With It Fitments Designed for Utility and Comfort. Much Progress Made in Shop Equipment and Tools

By B. M. IKERT

PRACTICABILITY is the outstanding feature which characterizes motor car fitments and shop equipment which the present day market affords. When a great part of this equipment is presented for scrutiny, as at the national shows, for instance, there is afforded the opportunity to note with a considerable degree of accuracy just what progress has been made.

Certainly there is a lack of the "gingerbread" variety of accessories by means of which the car owner in former days "dotted up" the car. Present day equipment is far more useful and practical. The car makers themselves have seen to it that their cars have the necessary smartness as to design of body and adornments to make unnecessary any amount of additional "dressing up."

Accessories Become More Practical

The patent medicine variety of cures for ignition and carburetion troubles have more or less gone from the market and in their place to-day we find really practical accessories. Instead of a device to "make your Ford a Packard" we find articles of merit, like electric and vacuum types of windshield wipers, cigar lighters, heating devices for the gas mix-

ture, enclosed car heaters, etc. In fact, with the rapid advancement made in late years of the enclosed type of body has come an almost equal advancement in the practicability of fitments for such bodies.

Shop Equipment Highly Developed

Not only have we seen a vast improvement in the usefulness of the accessories and fitments which actually go on motor vehicles, but this same improvement has been carried out in the great variety of shop equipment and tools which are a necessary part in the maintenance of motor vehicles.

With greater accuracy in production of engines, clutches, gear sets and in the final assembly of chassis by our motor car makers, has come more accurate shop machinery for the service and maintenance stations. In many of the machines and tools, for example, castings have been replaced by forgings and equipment which has been on the market for some time has been added to extend to its sphere of usefulness. This may well be illustrated, for example, in the case of an arbor press which made its appearance lately and in which there are incorporated several features of construction which make the press suitable

to a variety of uses in addition to merely that of an arbor press.

In the same way much other equipment has been made more rugged to give longer life. Also in some instances the speed of machines has been either reduced or increased to give better efficiency.

Wrenches, always a big item in connection with the maintenance of motor vehicles, have been developed to a high state of perfection. One has but to compare the socket wrenches of to-day with those of a few years ago to appreciate this. The wrenches of to-day fit the nuts and bolts much more accurately and are made of better material.

Finish Receives Attention

The finish on accessories and shop tools is for the most part excellent. The nickelplate on lamps, bumpers and body hardware in general is heavier than formerly, and consequently these things should stand up much longer in service than formerly. Many fittings are treated so they will not rust and naturally this will have its effect on the looks of a car after it has been in service for some time.

List of Exhibitors and Classes of Automotive

ON these two pages MOTOR AGE presents the complete list of accessory and equipment exhibitors at the Chicago Show with a brief description of the kind of products made by each. Lists published in advance of the show necessarily were incomplete because of late entries.

A

- A. C. Spark Plug Co., Flint, Mich.—Spark plugs and speedometers.
 Airlox Rubber Co., 2053 W. Jackson Blvd., Chicago—Inner tubes, valve caps, etc.
 Alert Alarm Co., 600 N. LaSalle St., Chicago—Radiator cap condenser.
 All Clear Windshield, Inc., Fall River, Mass.—Windshield cleaners.
 Allyne-Zerk Co., 704 Bassett Bldg., Detroit, Mich.—Lubricating system.
 Aluminum Co. of America, 2400 Oliver St., Pittsburgh, Pa.—Aluminum die castings, forgings and screw machine products.
 American Auto Lamp Co., Inc., 507 W. 50th St., New York City—Lamps and switches.
 American Automatic Devices Co., 500 S. Thorpe St., Chicago—Specialties.
 American Chain Co., Inc., Bridgeport, Conn.—Chains, bumpers, jacks, cotter pins and specialties.
 American Federal Wheel Co., 500 Keefe Ave., Milwaukee, Wis.—Wheels and bumpers.
 Appleton Electric Co., 265 Canal St., New York City—Electrical goods.
 Arrow Grip Mfg. Co., Inc., Glens Falls, N. Y.—Tire chains and jacks.
 Asch & Co., Inc., 17 W. 60th St., New York City—Locks and specialties.
 Autocoil Co., 136 7th St., Jersey City, N. J.—Transformers.
 Auto-Hone Co., Inc., 1587 Main St., Buffalo, N. Y.—Shop tools and equipment.
 Auto-Specialties Mfg. Co., St. Joseph, Mich.—Specialties.
 Automatic Wrench Corp. of America, 410 11th St., W., New York City—Garage tools.

B

- Baird Co., Decatur-Champaign, Ill.—Differential lock.
 Bassick Mfg. Co., 2650 N. Crawford Ave., Chicago—Lubricating systems and lubricators, spring covers, filters (Alemite Corp. of Ill.).
 Becker Bros., 23 N. Jefferson St., Chicago—Brushes for electrical equipment.
 Beneke & Kropf Mfg. Co., 21st and Rockwell Sts., Chicago—Carburetors and thermostats.
 Bisflex Corp., Waukegan, Ill.—Bumpers, ventilators and license holders.
 Borg & Beck Co., 6558 S. Menard Ave., Chicago—Clutches.
 Robert Bosch Magneto Co., Inc., 123 W. 64th St., New York City—Starting, lighting and ignition systems and lubricator.
 Boyle Valve Co., 2101 Larrabee St., Chicago—Valves.
 Brown-Lipe Gear Co., 1117 W. Fayette St., Syracuse, N. Y.—Clutches.
 T. M. Brude Co., 326 W. Madison St., Chicago—Specialties.
 Buda Co., Harvey, Ill.—Engines.
 Budd Wheel Co., 22nd and Lehigh Ave., Philadelphia, Pa.—Wheels.
 Buffalo Specialty Co., 375 Ellicott St., Buffalo, N. Y.—Specialties.
 Bunting Brass & Bronze Co., Toledo, O.—Bushings and bronze parts.
 Byrne, Kingston & Co., Kokomo, Ind.—Carburetors, circulating vacuum fuel feed system, regenerators, governors, steering column controls.

C

- C. G. Spring Co., 2642 E. Grand Blvd., Detroit, Mich.—Bumpers.
 Carr Fastener Co., 31 Ames St., Cambridge, Mass.—Fasteners and lubricating systems.
 Geo. R. Carter Co., 1600 Kentucky Ave., Connersville, Ind.—Body fittings.
 Champion Pneumatic Machinery Co., 8161 South Chicago Ave., Chicago—Pneumatic machinery.
 Cincinnati Ball Crank Co., Cincinnati, O.—Ball cranks, bumpers, tie rods, drag links, ball chains.
 Clark Equipment Co., Buchanan, Mich.—Axles and wheels.
 Cleveland Hardware Co., 4500 Lakeside Ave., Cleveland, O.—Garage tools.
 Columbia Axle Co., 850 E. 72nd St., Cleveland, O.—Axles.
 Continental Motors Corp., Detroit, Mich.—Engines.
 Cord Tire Corp., Martin Bldg., Pittsburgh, Pa.—Cord tires.

D

- Dalton & Balch, Inc., 2333 Michigan Ave., Chicago—Timing gears.
 J. F. Davis & Sons Co., Harris Trust Bldg., Chicago—Wheels.
 Dayton Steel Foundry Co., Dayton, O.—Steel castings.
 Diamond State Fibre Co., Bridgeport, Pa.—Timing gears.
 Doeher Die-Casting Co., 505 Court St., Brooklyn, N. Y.—Castings.
 Dunhameter Corp., 230 E. Ohio St., Chicago—Motor meters.
 Dunning Compressor Co., Holmesburg, Philadelphia, Pa.—Compressors.
 Duro-Brite Co., care of Marshall Metal Corp., 2608 S. Wells St., Chicago—Bumpers and enamel process.

E

- Eagle-Ottawa Leather Co., Grand Haven, Mich.—Leather upholstery material.
 Eaton Axle & Spring Co., Cleveland, O.—Axles, springs and bumpers.
 Eberhard Mfg. Co., 2734 Tennyson Road, Cleveland, O.—Malleable iron fittings.
 Walter Eckhouse & Co., 616 S. Michigan Blvd., Chicago—Switches, trunks and visors.
 Eclipse Machine Co., Elmira, N. Y.—Starting motors.
 Ensign Carburetor Co., 3108 S. Michigan Ave., Chicago—Carburetors.

F

- Fabric Body Corp., 5940 Cass Ave., Detroit, Mich.—Body fabric.
 Fitzgerald Mfg. Co., Torrington, Conn.—Gaskets.
 Flash Sales Corp., 4800 N. Ashland Ave., Chicago—Tool kits.
 Flentje, Ernst., 1643 Cambridge St., Cambridge, Mass.—Shock absorbers.
 Folberth Auto Spec. Co., 7914 Lake Ave., Cleveland, O.—Windshield cleaners.
 Foster-Johnson Reamer Co., Elkhart, Ind.—Shop tools, equipment and pistons.

G

- Gabriel Mfg. Co., 1407 E. 40th St., Cleveland, O.—Shock absorbers.
 General Electric Co., Schenectady, N. Y.—Electrical equipment and gears.
 Gisholt Machine Co., Madison, Wis.—Shop equipment.
 Gits Bros. Mfg. Co., 1940 S. Kilbourn Ave., Chicago—Oil cups, oil hole covers.
 Globe Mfg. Co., Battle Creek, Mich.—Compressors.

H

- H. A. D. Sales & Engineering Co., Bronson, Mich.—Ignition and lighting switches and accessories.
 L. P. Halladay Co., Eldorado and 3rd St., Decatur, Ill.—Bumpers and spring cushions.
 Hall Cylinder Hone Co., 433 Dorr St., Toledo, O.—Shop tools and equipment.
 Edward V. Hartford, Inc., West Side Ave. and Carbon Place, Jersey City, N. J.—Shock absorbers and bumpers.
 Robert H. Hassler, Inc., 1545 Naomi St., Indianapolis, Ind.—Shock absorbers.
 Hayes Wheel Co., Horton St., Jackson, Mich.—Wheels and rims.
 Hercules Motors Corp., Canton, O.—Engines.
 Holmes Co., Ernest, 700 E. Main St., Chattanooga, Tenn.—Tools.
 John C. Hoof & Co., 157 W. Illinois St., Chicago—Gears, valve tappets, timing gears, adjusting screws, valves.
 Houldaille Co., 1400 West Ave., Buffalo, N. Y.—Shock absorbers and spring protectors.
 Hutto Engineering Co., 6913 E. Jefferson Ave., Detroit, Mich.—Shop equipment and tools.

I

- Igo Vertical Bumper Co., 3005 Montrose Ave., Chicago—Bumpers.
 Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago—Timers, acetylene generator, cutting devices and supplies and pumps.
 Indiana Piston Ring Co., Hagerstown, Ind.—Piston rings.
 Inshield Products Co., 105 Madison Ave., Toledo, O.—Spot lights.

Products on Display at the Chicago Show

J

Jenkins Vulcan Spring Co., Richmond, Ind.—Springs.
Jiffy Jack Co., 1225 Harmon Place, Minneapolis, Minn.—Jacks.
Jonas, C. N. & F. W., 528 Transportation Bldg., Chicago—Spot lights, radiator caps, tools and water pumps.

K

K-W Glare Shield Co. of Mass., Inc., 46 Cornhill, Boston—Glare shields.
K-W Ignition Co., 2811 Chester Ave., Cleveland, O.—Ignition systems.
K & W Rubber Co., Delaware, O.—Inner tubes.
Kehawke Mfg. Co., 421 S. 6th St., Minneapolis, Minn.—Vulcanizing and tire repair equipment.
Klingbell, G. L. E., 1315 W. & W. Bldg., Omaha, Nebr.—Spring leaf separator.
Kokomo Electric Co., Kokomo, Ind.—Distributors, coils, stop lights, ignition systems, heaters, ignition points, carburetor adjustor, cutouts.

L

Lanton Auto Equipment Co., Inc., 4700 Grand Central Terminal Bldg., New York City—Luggage carrier.
Limousine Body Co., Kalamazoo, Mich.—Limousine bodies.
Lorraine Corp., 341 E. Ohio St., Chicago—Spot lights.
Lovejoy Mfg. Co., 39 Brighton Ave., Boston, Mass.—Shock absorbers.

M

Manzel Bros. Co., 317 Babcock St., Buffalo, N. Y.—Shock absorbers.
Marshall Metal Corp., 2608 S. Wells St., Chicago—Solder, welding material, aluminum filler.
Mayson Sales Corp., 2320 S. Michigan Ave., Chicago—Recarbureting valves.
Metal Stamping Co., Inc., 13th and East Ave., Long Island City, N. Y.—Bumpers.
Miller Universal Grinder, Erwin E. Miller, Mfr., 129 W. Santa Fe Ave., Fullerton, Calif.—Shop equipment.
Monarch Bumper Mfg. Co., 1622 Euclid Ave., E., Detroit, Mich.—Bumpers.
Moto-Meter Co., 15 Wilbur Ave., Long Island City, N. Y.—Motor meters and radiator caps.
Motor Products Corp., Detroit, Mich.—Pneumatic accelerator.
Murphy Varnish Co., 224 McWhorter St., Newark, N. J.—Varnish.
McAdams Co., J. C., 145 W. 63rd St., New York City—Radiator caps.
McClelland Co., S. S., 1926 Broadway, New York City—Oiling systems and specialties.
McQuay Radiator Corp., St. Paul, Minn.—Radiators.

N

Nacto Cleaner Corp., 2171 Madison Ave., New York City—Cleaning fluids.
Naperville Machine Co., Inc., Naperville, Ill.—Shop equipment.
National Lead Battery Co., St. Paul, Minn.—Storage batteries and parts.
New York Wire & Spring Co., P. O. Box 42, Uptown Sta., Hoboken, N. J.—Bumpers.
Noisom Auto Compass Co., 321 S. Michigan St., South Bend, Ind.—Compass.

O

Oakes Co., 3019 Roosevelt Ave., Indianapolis, Ind.—Specialties.
Overhead Door Corp., 6146 Cass Ave., Detroit, Mich.—Overhead garage doors.

P

Penn Spring Works, Baldwinsville, N. Y.—Bumpers.
Pantasote Co., 11 Broadway, New York—Tops and fibre board.
Panyard Piston Ring Co. of Ill., 1919 S. Michigan Ave., Chicago—Piston rings.
Perfection Gear Co., 1475 Michigan Ave., Chicago—Timing gear.
Perfection Heater & Mfg. Co., 6545 Carnegie Ave., Cleveland, O.—Heaters.
Perkins, Campbell Co., 622 Broadway, Cincinnati, O.—Seat and tire covers; leather goods.
Peters Automotive Products, 2019 Michigan Ave., Chicago—Specialties.
Petroleum Motors Corp., Rockford, Ill.—Engines.
Pines Mfg. Co., 404 N. Sacramento Blvd., Chicago—Specialties.
Polygon Products Co., 141 Milk St., Boston, Mass.—Oils, cleaning liquids, etc.
Wm. E. Pratt Mfg. Co., 190 N. State St., Chicago—Roller bearings, specialties and tools.
Prest-Air Corp., 68 Hunters Point Ave., Long Island City, N. Y.—Air devices and jacks.
Protexall Co., Abingdon, Ill.

R

Rajah Auto-Supply Co., Bloomfield, N. J.—Spark plugs.
Rajo Motor Co., 1325 Racine St., Racine, Wis.—Engines.
Reus Mfg. Co., Eager St. and Fallsway, Baltimore, Md.—Timing gears and piston rings.
Rex Mfg. Co., Connersville, Ind.—Body tops.
Ross Gear & Tool Co., Lafayette, Ind.—Steering gears.

S

A. Schrader's Sons, Inc., 470 Vanderbilt Ave., Brooklyn, N. Y.—Specialties.
Shakeproof Lock Washer Co., 154 E. Erie St., Chicago, Ill.—Lock washers.
Sieg Co., Davenport, Ia.—Auxiliary transmission for Fords.
Simplex Windshield Wing Co., 2241 S. Michigan Ave., Chicago—Bumpers and windshield wings.
Simplicity Engine & Mfg. Co., Port Washington, Wis.—Engines.
Snap-On Wrench Co., 14 E. Jackson Blvd., Chicago—Garage tools.
Sound Sales Service, 537 Murke Bldg., Seattle, Wash.—Shop equipment.
South Bend Lathe Works, South Bend, Ind.—Lathes.
Speed-O Multiple Valve Lifter Corp., 1926 Broadway, New York City—Multiple valve lifters.
S. S. Stafford, Inc., 609 Washington St., New York City—Liquid products.
Steel Products Co., 2196 Clarkwood Road, Cleveland, O.—Valves, bolts, ball studs, drag links, starting cranks.
Stewart-Warner Speedometer Corp., 1856 Diversey Blvd., Chicago—Speedometers, bumpers, shock absorbers, vacuum systems, bearing metal and specialties.
Stover Signal Engineering Co., Racine, Wis.—Lamps.
Stromberg Motor Devices Co., 64 E. 25th St., Chicago—Carburetors.
Super Shock Absorber Co., Inc., 37 Fairmont Ave., Jersey City, N. J.—Shock absorbers.

T

C. A. Taylor Trunk Wks., 678 N. Halsted St., Chicago—Trunks and suit cases.
T. N. T. Spark Plug Co., 1966 E. 66th St., Cleveland, O.—Spark plugs.
Tonneau Shield Co., Inc., 47 W. 63rd St., New York City—Tonneau shields.
Trico Products Corp., Buffalo, N. Y.—Specialties.
Turner Mfg. Co., Kokomo, Ind.—Accelerator and carburetor controls, timers, door and lever extensions.

U

U. S. Auto Lamp Mfg. Co., Inc., 540 W. 58th St., New York City—Lamps.
U. S. Axle Co., Water St., Pottstown, Pa.—Axles and front wheel brakes.
United States Chain & Forging Co., Union Trust Bldg., Philadelphia, Pa.—Tire chains.

V

Vacuum Oil Co., 61 Broadway, New York City—Lubricant.
Vitalock Co., 1721 Broadway, New York City—Gas saving device.
Vortex Carburetor Co., Inc., 161 Massachusetts Ave., Room 305, Boston, Mass.—Carburetors.

W

Wall Pump & Compressor Co., Quincy, Ill.—Air compressors.
Waltham Watch & Clock Co., Waltham, Mass.—Watches and speedometers.
John Warren Watson Co., 24th and Locust Sts., Philadelphia, Pa.—Shock absorbers.
Waukesha Motor Co., Waukesha, Wis.—Engines and turbulence head.
Wesson Sales Co., Room 512, 549 W. Washington St., Chicago—Shop equipment.
Weaver Mfg. Co., Springfield, Ill.—Garage equipment.
Wel-Ever Piston Ring Co., 1701 Spielbusch Ave., Toledo, O.—Piston rings, valves and specialties.
Wheeler-Schebler Carburetor Co., Indianapolis, Ind.—Carburetors.
Whiteland Mfg. Co., Washington Ave., Long Island City, N. Y.—Cigar lighter.
Wilson, K. R., 10 Lock St., Buffalo, N. Y.—Shop tools.
Wilson & Co., Thos. E., 2037 Powell Ave., Chicago—Golf bag carrier.
Wire Wheel Corp. of America, 1700 Elmwood Ave., Buffalo, N. Y.—Wheels.
Wonderlamp Co., Bridgeport, Conn.—Lamps.
Wolverine Bumper & Specialty Co., 514 Bond Ave., Grand Rapids, Mich.—Bumpers and specialties.

Y

Yellow Jack-It Mfg. Co., 11 S. Desplaines St., Chicago—Jacks.

New Products Described and Illustrated

Perfection Bench Presses

A variety of shop presses is included in the Perfection line, ranging from 3000 lb. pressure up to 50 tons. The "armature press" is designed to meet the needs of the electrical repair shop. It is 17 in. high and the height over hardened pressure plate is 9 1/4 in. The price of this press is \$25. The combination arbor and riveting press can, by attaching the tools for replacing brake linings and transmission linings, be transformed into a riveting machine in a minute's time. This machine ranges in price from \$23.80 to \$41.80. With each Perfection 30 and 50-ton arbor press the company furnishes one pair of V-blocks of uniform size and shape, a two-piece pressure plate of semi-steel and a safety cap for screws. The 30 and 50-ton presses sell respectively for \$85 and \$110. Naperville Machine Co., Inc., Naperville, Ill.

Bosch Shock Absorber

The new Bosch shock absorber has two functions. It cushions the car against the minor inequalities of the road and at the same time acts as a rebound check. In this shock absorber combined friction and spring loading is employed. The frictional unit is an oilless wooden block of cross-grained hard wood. This block is tape bored and mounted on a center bolt. The back surface of the bearing is accurately turned out to a conical shape and rotated over the fixed cone which is attached to the back cover of the absorber. A belt assembly serving as a connecting link between the friction block and the resistance spring is placed over the periphery of the block. A shoe riveted to the belt and fitting the curvature of the block holds the belt in alignment.

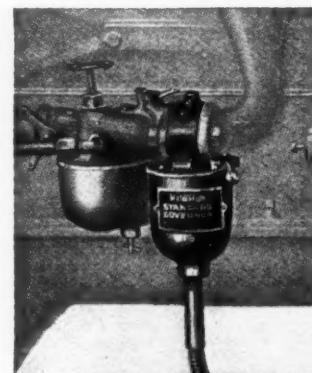
The belt guide also carries the hook which connects the belt to the spring. The coils of the resistance spring are filled with graphite grease and the entire face of the spring is covered by a reinforcing plate. An adjustable outer housing or front cover incloses the entire unit. The amount of frictional resistance is adjustable, as it is dependent upon the tension in the spring, which is increased by winding up on the spring by means of the adjustment nut.

Schrader Balloon Tire Gage

This gage resembles the regular angle foot model with the exception that it is calibrated in one pound instead of five pound units. It is generally recognized that proper inflation for balloon tires necessitates a gage graduated to closer limits than the conventional five pound unit graduation. A. Schrader's Son, Inc., Brooklyn, N. Y.

Kingston Standard Truck Governor

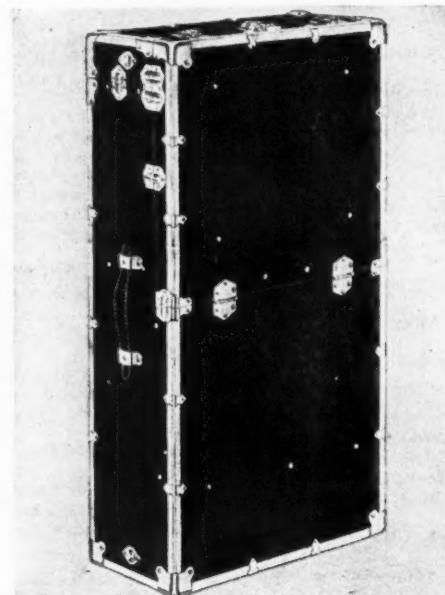
The Byrne, Kingston Company are displaying a speed governor, controlled in a novel way. Instead of its being affected by the engine, the speed of the front wheel is used for this purpose, the drive being similar to that of a speedometer. The centrifugal principle is employed to



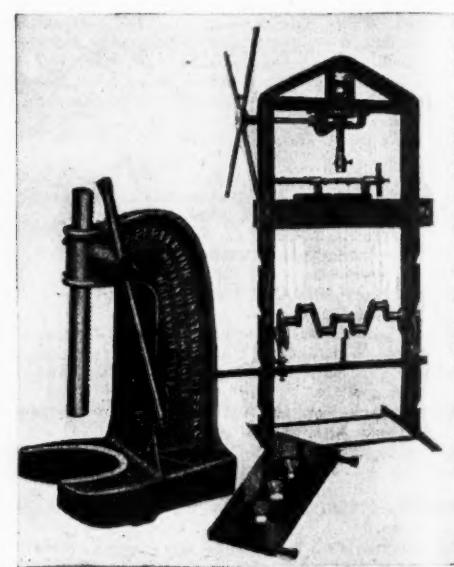
Kingston standard truck governor



Kingston directing signal



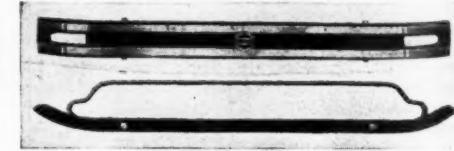
Autorobe trunk



Perfection bench presses



Schrader balloon tire gage



Federal bumpers

control a shutter in the inlet manifold, just ahead of the carburetor. With this method of control the full power of the engine may be applied until the predetermined car speed has been attained. Byrne, Kingston & Company, Kokomo, Indiana.

Autorobe Trunk

This trunk is substantially built and can be carried on all automobile running boards, or inside the car and on the rear of most cars. Special equipment is provided for attaching the trunk securely to the car and the trunk is always ready to be quickly detached when desired. Some of the exclusive features of this trunk are the open top, polished wire hangers, removable trays, pockets for shoes and a compartment for small wearing apparel. The trunk measures 38x22 1/2x10 1/2 in. and weighs 45 lbs. Walter

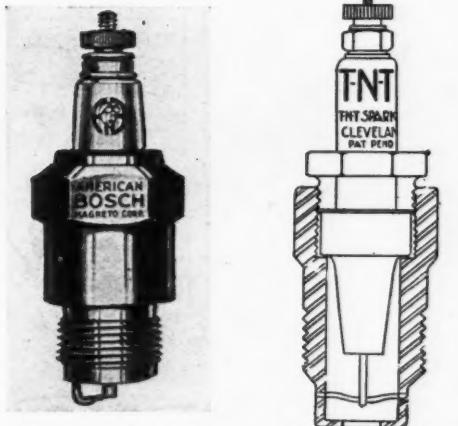
Eckhouse & Co., 616-622 Michigan avenue, Chicago.

Kingston Directing Signal

A rear signal for warning the driver of the car behind of intended stops or changes in direction, is displayed by The Kokomo Electric Company. It is operated by means of electro magnets, with controlling switch handle placed within easy reach of the driver. Action of these electro magnets causes the words Stop, Go, or right hand or left hand arrows to appear on the face of the signal. The tail lamp is also incorporated in the signal in such away as to illuminate it as well as the license, which may be attached just below the signal. The price of the complete outfit is \$12.50. Kokomo Electric Company, Kokomo, Indiana.



Bosch electric windshield wiper



Bosch spark plug

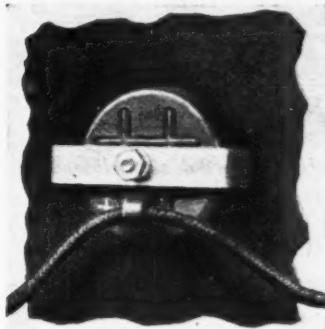
T-N-T spark plug



Edmunds and Jones headlamp



Temme wing type bumper



Westinghouse ammeter

Federal Bumpers

Federal Pressed Steel Co., manufacturers of steel stampings, have just recently placed on the market two new models of automobile bumpers. The new models are known as the Broadway and the Metropolitan. The Metropolitan model is featured by a pressed steel front of 5 inch depth with embossed sections. The spring arms which carry the bumper front are formed into an eye at their ends, through which a bolt passes vertically. This construction forms a hinge and it is claimed that considerable of the impact stresses are thus absorbed, thus relieving the frame horns of the chassis.

The Broadway model retains the characteristic Federal method of attaching the absorber springs but differs from the Metropolitan in that the fronts are made of double spring bars finished in black, nickel or black and nickel.

A universal bracket has been developed that permits installation of either

model on any one of 70 models of cars. List prices on the various types and models varies from \$20 to \$24, depending on the exterior finish. The Federal Pressed Steel Co., Milwaukee, Wis.

Bosch Electric Windshield Wiper

Three new Bosch accessories were being shown at the Congress hotel. These were an electric windshield wiper, a new shock absorber and a line of spark plugs. The new windshield wiper is an electric motor driven device which is characterized by sturdy parts and a positive worm drive. The small electric motor which drives the device carries on the end of the armature shaft a worm which in turn drives a wheel. The wheel carries a crank which takes the rotary motion of the armature shaft and converts it into reciprocating motion, driving the wiper.

Bosch Spark Plug

The new Bosch plugs have a crescent shaped electrode of nickel-steel alloy.

The shell is in one piece and is of heavy steel to prevent distortion. The plug is claimed to be carbon and leakproof and is made in five types and sizes. It lists at \$1.00, Ford size 75 cents, American Bosch Magneto Co., Springfield, Mass.

T-N-T Spark Plug

A closed end plug and cross wire ground electrode are distinctive features of this novel plug. It is claimed that an auxiliary firing chamber is provided by the closed end and that a noticeable saving in gasoline accompanies the use of the plug. According to the makers the closed end construction also acts as a baffle for any oil that would tend to foul the plug. T-N-T Spark Plug Co., Chicago, Ill.

Temme Exhaust

The Temme company is also marketing its new exhaust heater which is featured by a dash controlled valve. The heater is flush with the floor. The same heater is used for any make of car. It is sold in two sizes, at \$20 and \$22.50. For cars with double exhaust an extra charge of \$7.50 is made. Temme Spring Corp., Chicago, Ill.

Edmunds and Jones Headlamp

A radical departure from ordinary construction is seen in a headlamp being displayed at the Congress hotel by the Edmunds and Jones Corp. This lamp has the rear portion of parabolic shape like a conventional headlamp. The forward portion, however, has an extension in the form of a portion of reversed parabola, which serves to confine the rays of light which normally wander out in every direction, and serve to produce glare so productive of danger in night driving. Other details of construction are such that a white light is cast downward and forward, also to the sides to thorough illuminates the road. The only light that reaches the eye of an approaching driver, however, is a well diffused amber light, which has no blinding action. The display of this lamp was accompanied by a demonstration in which the form of the illuminated area as thrown on a screen was shown to conform to S. A. E. recommendations. The Edmunds and Jones Corporation, Detroit, Mich.

Temme Wing Type Bumper

The Temme Spring Corp. has added rear wing type of bumpers to its line. These bumpers are the wing instead of the full type. They are made from oil-tempered spring steel, heat treated and hand fitted. They are graphited when assembled. The wing type bumpers are suitable for Cadillac, Durant four, Lincoln, Packard, Peerless, Reo, Studebaker, Stutz and other high-priced cars. They provide, it is claimed, better protection for the rear fenders than the ordinary straight bars and it is also claimed that there is no trouble in handling spare tires.

Westinghouse Rubber Battery Cases

No changes have been made in the Westinghouse batteries themselves, but the cases are now all of rubber. A line

of low-priced batteries was added to the Westinghouse line a few months ago. This is known as the OB type battery. This battery is of the so-called thick plate design and is for use where the service is not severe and a low-priced battery is desired. The OB batteries are in three sizes and at the usual lighting rate are of 87, 105 and 52 ampere hours capacity. The plates are 5% in. wide, 4 $\frac{1}{4}$ in. high with .104 in. thickness for the positive and .115 in. thickness for the negative. The separators are ribbed cedar. Westinghouse Union Battery Co., Swissvale, Pa.

A change which will be noticed in the Westinghouse line is the adoption of ball bearings all through instead of the sleeve type of bearing. Among the exhibits is a new ignition head for the Hupp cars. Hupp formerly used Westinghouse for starting and lighting, but another make of ignition. The new cars are using Westinghouse ignition as well as starting and lighting. The new Sterling car is also using the Westinghouse equipment for all three functions. This is a 12-volt installation.

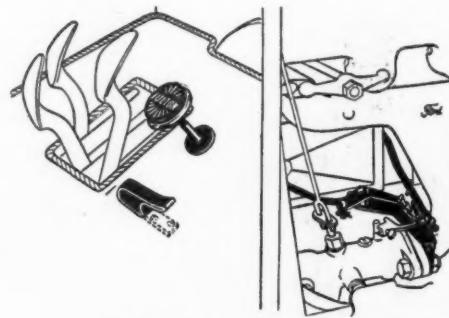
There are also some special switches, junction boxes, etc., on exhibition for the first time. This is all special, however, and is not in production. The Westinghouse ammeter is shown. This is unique in that the wire does not have to be connected, but simply threaded through the loop provided for the purpose in the instrument. The indicator is actuated by magnetic inductance, having neither connections or coils. Westinghouse Electric and Mfg. Co., East Pittsburgh, Pa.

Shakeproof Lock Washers

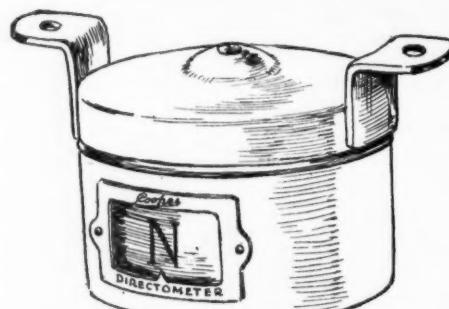
This is a new type of lock washer, which, unlike the conventional type, is very much thinner. Also it has a series of prongs which catch both the underside of the nut and the material against which the nut is screwed. The prongs in the one style are on the outside, while another style has them on the inside. In the latter case the washer is made large enough so it projects slightly beyond the nut. In such cases where the washers are nickel plated a good appearance is secured. Ordinarily the washers are Parkerized. A rather unusual feature is found in a type of Shakeproof washer which can be used under the head of a countersunk bolt or screw. Shakeproof Lock Washer Co., 154 East Erie street, Chicago, Ill.

Fulton Ford Accelerator

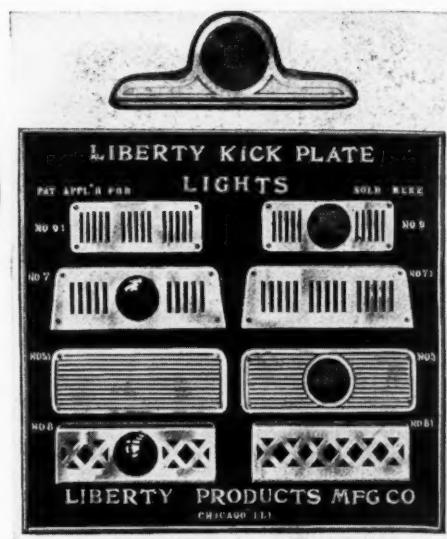
An accelerator for Ford cars is also being shown by the Fulton Co., the price being \$1.50. Hand and foot control act independently, an adjusting nut on the rod to hand control enabling the driver to regulate the hand throttle as desired. The rod from the pedal is on the right hand side of the engine away from the magneto terminal, and the pedal can be set out of the way of extension pedal pads. The foot rest makes smooth action possible and is so designed that it can be attached without cutting large hole in mat. The device is finished in nickel.



Fulton Ford accelerator



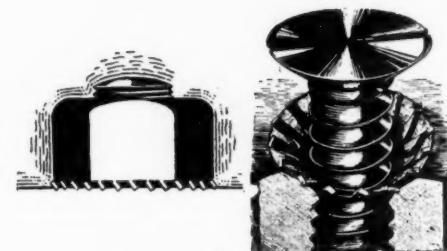
Cooper directometer



Liberty kick plate lights



Helzen pedal slot closers



Shakeproof lock washers

Cooper Directometer

A device for enabling the motorist to tell the direction in which he is traveling is being marketed by the Fulton Company, this being a Cooper product, known as a Directometer. It is attached by means of a bracket to the top bow of the car, where it can be seen by the driver. It operates on the compass principle and shows at a window in the case, the letters N. S. E or W, indicating the general direction in which the car is going. The price is \$10.00.

Liberty Kick Plate Lights

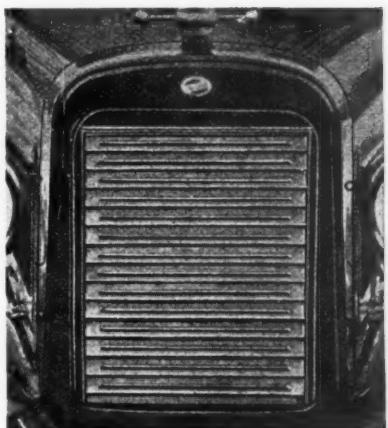
This is a combination kick plate and signal light for installation in the running board splash shield. One of these plates with its light and lens is mounted in each splasher shield. A red lens is used on one side and green on the other. In addition to the kick plates with lights mounted in them this firm also markets the kick plates separate without lights. Prices for kick plates alone vary from \$2 to \$2.50 for kick plates only per pair, and \$6 to \$8 for kick plates with lights. Jobbed by Simplex Windshield Wing Co., Chicago, Ill. Made by Liberty Products Mfg. Co., Chicago, Ill.

Helzen Pedal Slot Closers

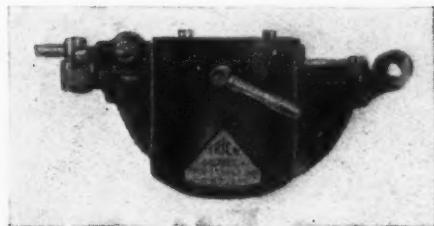
The Helzen Pedal Slot Closers are being displayed by The Fulton Company, Milwaukee, Wis., these consisting of metal framework in which substantial rubber pieces are set vertically on edge. This construction permits closing of the opening tightly around the pedal. The price is \$2.25 for a full set.

Westinghouse Electric Devices

The Westinghouse line of electric lighting, starting and ignition devices has been broadened by the addition of new models suitable for specific installations. This company has on exhibition its 12-volt equipment for the new Locomobile. The 12-volt system is being favored for Knight and very large engines where higher and more positive cranking speeds are desired for winter starting. The generator is larger and carries the voltage regulator mounted on a bracket on the end. This car has push button starting, the push button being on the dash and drawing the pinion into engagement by means of a solenoid. There are three bands on the armature for protection against over-speeding. The generator is a four-brush constant potential type.



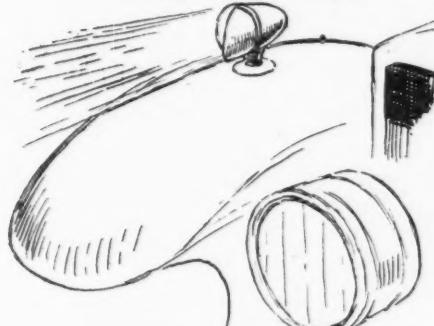
Oakes radiator shutter



Trico windshield cleaner



Stromberg windshield wiper



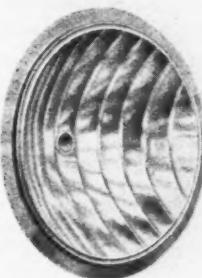
The Jacobs road lite



Duckworth silent chain



Whiteland cigar lighter



Flatlite reflector

Oakes Radiator Shutter

A manually operated radiator shutter is exhibited by the Oakes Company, the price being \$12.50. This shutter is installed by slipping it under the radiator shell and it thus becomes a permanent part of the car and cannot be stolen. The Oakes Company, Indianapolis, Indiana.

Trico Windshield Cleaner

An automatic compensating valve that permits uniform cleaner arm speed regardless of manifold vacuum is a feature of the Trico cleaner. This compensating valve forms a part of the conduit of the cleaner unit, the opening increasing

or diminishing with the rise or fall of the manifold vacuum. The power chamber carries leather sealed rectangular elements and the valve action is controlled by a double contour cam. It is claimed by the makers that the Trico has a wider range of sweep than any other oscillating windshield cleaner. Trico Products Corp., Buffalo, N. Y.

Stromberg Windshield Wiper

A windshield wiper of rugged construction, operating on the electric principle, is on display at the Stromberg booth. Exposed metal parts are finished in black enamel and are non-corroding. The wiper is said to consume less current

than would be required by one headlamp. The price is \$9.00. Stromberg Motor Devices Company, Chicago.

Van Malleable Cast Wheels

The Van Wheel Corp., manufacturers of Malleable cast wheels for trucks, are about to enter the passenger car field with 20 and 21 in. wheels suitable for balloon tires. These wheels are interchangeable with the wood wheels used for passenger cars and it is claimed will weigh on the average of 2 lbs. per wheel less than the wood wheel equipment. It is claimed that the wheels are held accurately to balance within .002 in. of out of round and consequently materially reduce shimmy effect. It is purposed eventually to bring out a cast aluminum wheel, but this is not intended for some time. Van Wheel Corp., Oneida, N. Y.

The Jacobs Road Lite

The Jacobs Road Lite is presented as a possible solution of the road lighting problem, at least as far as illuminating the ditch is concerned, without, at the same time, blinding an approaching driver.

It consists of a small light mounted on the right front fender and provided with a shield extending forward at the left side of the lamp, to confine the rays of light to the right side of the road. The lamp sells for \$4.00 Jacobs Auto Safety Lamp Company, Inc., Blacksburg, Virginia.

Whiteland Cigar Lighter

This lighter is featured by the construction of the glow or heating unit. Instead of metallic resistance wire the unit is made up of two carbons of about $\frac{1}{8}$ inch diameter. The ends of the carbon are separated just far enough to allow a small arc to be drawn, thus heating the carbon elements. The unit is detachable from its socket and in practical use the procedure is to turn the switch, which is done by turning the lighter unit. As soon as the carbons become red hot the unit itself is removed from its socket and passed to the occupants of the car. It is claimed that three cigars can be lighted from one heating. There are no cords or reels involved in the construction and the unit itself can be carried in the pocket. Price at retail, \$3.00. Willton Distributors, Inc., New York.

Flatlite Reflector

The Flatlite company, which is supplying the Paige, Chandler, Oldsmobile, Cleveland, Jewett and Chevrolet companies with headlamp equipment, is now making standard adaptor reflectors suitable for any type or make of headlamp. In installing the adaptor is put in the lamp without removing the reflectors supplied with headlamps. The Flatlite reflector consists of alternating wide and narrow vertical strips or fluted reflecting surfaces, designed to control the rays so as to give the desired amount of side and forward illumination. With these reflectors plain front glasses are used. Bulbs are furnished with the adaptors and the filaments in these bulbs are claimed to be accurately located. The

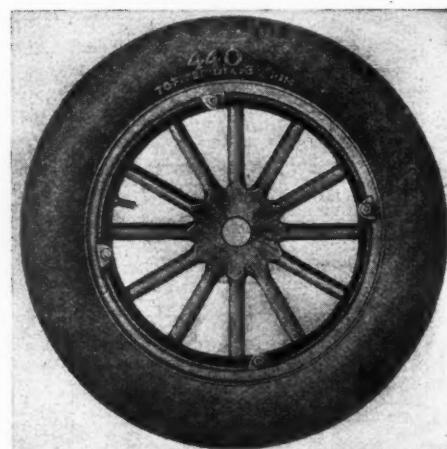
adapters are furnished with single bulbs and also with double bulbs for out of focus dimming. The single bulb models sell for \$5.00 per pair and the double \$6.00 per pair. Special sets for Fords are \$3.50 and for Dodge cars, \$4.00.

Duckworth Silent Chains

The Duckworth company, which has been making chains for the motorcycle industry for several years, is entering the replacement parts field with a silent front end drive chain for automobile engines. The chain is a center flange type with ground links. The pins in the Duckworth silent chain are hollow and are split. The split in the pin acts as a means of distributing oil and also acts as a spring cushion by closing together when load is applied and releasing when the load is removed. The chains are suitable for running on the sprockets provided in most of the standard front end chain drives. Duckworth Chain and Mfg. Co., Springfield, Mass.

Miller Universal Grinder

The Miller universal valve grinder is a self-contained portable valve grinding tool adapted to be readily attached directly upon the block or cylinder of various engines. The base is bolted to the block and a turntable post on the base allows the grinder to be swung in any direction so that all valves can be ground at one setting of the base. There is a lifting cam in the base which has a circuit breaking switch which automatically stops the motor when the grinding head is disengaged from the valve and starts



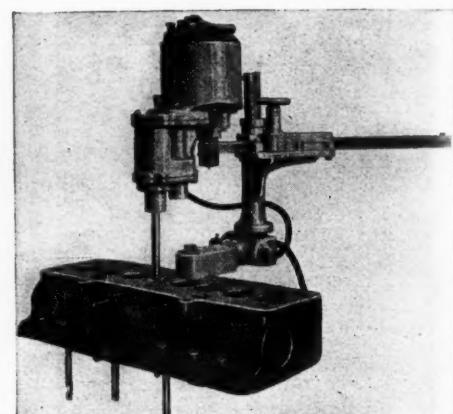
Wheels for balloon tires

the motor when the grinding head is engaged with the valve being ground.

The net weight of the outfit is 26 lbs. Nine feet of electric cord comes with the grinder and the price of the complete outfit is \$100. Made by Erwin E. Miller, 129 West Santa Fe avenue, Fullerton, Cal.

Wheels for Balloon Tires

Small size wheels with rims suitable for balloon tires are on display at the booth of the Hayes Wheel Company. These wheels are made for Ford, Chevrolet, Overland, Star and Gray cars. A complete set of four wood wheels with five rims and necessary bolts, nuts and wrench, sell for \$36.00, finished in black color varnish or \$40.00 for natural wood finish.



Miller universal grinder

Wire wheels and disc wheels for balloon tires will also be put on the market by the Hayes Wheel Company, Jackson, Michigan.

DuroBrite

This is a nickel colored baked enamel process which is said to eliminate much of the grief attached to nickel plate. DuroBrite resembles nickel plate and is waterproof and rustproof. In the process the metal is first protected from rust. Then the metallic color is applied and then the color is protected so it cannot tarnish. It never requires polishing. The finished product is not an armor plate, but the company states it will outlive the product to which it is applied. The DuroBrite Co., 111 West Jackson street, Chicago.

Interesting Observations at Accessory Displays

CINCINNATI BALL CRANK CO., Cincinnati, Ohio.—This firm had on exhibition, in the Coliseum gallery, its complete line of products including drag links, steering tie bars, lubrication systems, bumpers, starting cranks, ball and socket joints and bell cranks.

Considerable space in the exhibit was given over to a demonstration of the Ball-crank chassis and machinery lubrication system. The lubricant gun is made in several models and additional special tips are supplied with each gun so that oil or grease may be used or the gun may be used for spray cleaning of greasy parts.

SPEED-O MULTIPLE VALVE LIFTER CORPORATION, 1926 Broadway, New York, N. Y.—The Speed-O valve lifter a comparatively new service station tool, was shown at the Coliseum exhibit. The firm listed above controls basic patents on all lifters of the multiple principle that operate on more than two valves at one time. The device is an acknowledged time saver and is made at the present time in models to fit all Continental engines, Lincoln, Dodge, Jordan, Maxwell, Hudson, Cadillac, Studebaker and Packard.

ASCH & COMPANY INC., New York.—Manufacturers agents.—The Asch Co. is manufacturers representative for a diver-

sified line of automotive merchandise. A few of the articles sold by this firm are truck and passenger car tire carriers, lamp and license brackets, manufactured by the International Stamping Co. cigar lighters and ash trays, toilet cases and enclosed car furnishings are sold by this organization for the Nash Manufacturing Co.

Other products include the line of reamers made by the Watervliet Tool Co., Inc., electric horns built by Schwarze Electric Co., radiator caps by Crown Automotive Co., and locking steering wheels by the Spencer Mfg. Co. The firm of Alden Perr of Jackson boulevard, Chicago, represent the Asch Co. in the Chicago territory. The full line was exhibited.

UNITED STATES CHAIN AND FORGING CO., Pittsburg, Pa.—This is one of the three very large American firms engaged in the manufacture of electric and fire welded chain. In addition to the well-known line of McKay Shurout tire chains a full line of commercial and industrial chain of the welded type is manufactured. The only weldless chain made by this company is the side chain of the McKay Shurout models for automobile tires. Five plants are operated in the following cities: Pittsburg and York, Pa., Columbus and Marietta, Ohio,

and Huntington, W. Va. The United States Chain and Forging Co. display represented a company older than the automobile industry itself, having been organized forty-seven years ago.

BENEKE & KROPP MFG. CO., Chicago, Ill.—A full line of carburetors sold under the name of Rayfield are manufactured by this concern. Additional products are thermostats for automobiles, fuel strainers and a full line of plumbing goods. The exhibit in the Coliseum gallery was devoted to a display of the line of Rayfield carburetors, thermostats and strainers.

AUTO SPECIALTIES CO.—This concern is engaged in the manufacture of automotive products for both factory and replacement consumption. Prominent among the replacement and accessory articles which it displayed is the Drednaut equalizer for Fords, the Drednaut long handle jock. The latter is made in several models and is equipped with a handle of sufficient length to allow raising of the car without crawling under to set the jack.

T. M. BRUDE CO., Chicago, Ill.—T. M. Brude Co. are builders of the Brude windshield visor which is featured by its Houze colored glass visor element. The Coliseum gallery exhibit of this firm contained a display of the full line of Brude

visors mounted on a special illuminated panel. It is claimed by this firm that their visor will neutralize the glare of oncoming headlights and that it is transparent enough to permit reading of road signs, etc. Brackets are furnished for attachment to any car, open or closed, and a choice of amber, green, blue, and Chartreuse glass colors is available. Brude visors are furnished for the replacement trade.

WIRE WHEEL CORPORATION OF AMERICA, Buffalo, N. Y.—The sole and only product produced by the above named corporation is wheels. Two types were shown, wire and disk. The disk wheels are a comparatively new addition to the line and are being furnished as regular equipment to several car companies for the installation of balloon tires. The Wire Wheel Corporation maintains its own direct factory branches and service stations in addition to several independent distributors. The Wire Wheel Corp. of America is the outgrowth of the original makers of the Houk wheels. The firm, at the present time, controls the manufacture of the Rudge Whitworth wire wheel in this country, builds the House wire wheel and the Buffalo disk wheel. Replacements for old and new cars are available from the company direct, or its distributors. The service departments of the direct factory branches are also equipped to restring and repair any and all other makes of wire wheels.

JENKINS VULCAN SPRING CO., Richmond, Ind.—The date of origin of the Jenkins Vulcan Spring Co. dates back to the days of horse drawn carriages. With the inception of the automobile the firm has kept pace and at the present time manufactures a full line of standard replacement springs, the Eclipse Master springs, and a special shock absorber for the Ford car. The Eclipse Master springs are an improvement over the original Grey Goose shock absorber, built by this firm.

DALTON & BALCH INC., Chicago, Ill.—Dalton and Balch are both distributors and manufacturers of Diamond State Celeron and D&B engine gears. These gears are used as factory equipment on the Falls and Lycoming engines according to information supplied by men at the booth. Besides a large factory equipment business this firm also supplies their product for installation in old cars or any models originally equipped with all metal gears. Practically all of the new model D&B gears are recommended for installation with the composition gear on the crankshaft and third gear of the train. This is, of course, the opposite practise of some other makers, but it is claimed by the D&B organization that there are fundamental engineering reasons behind their method.

A complete catalog giving replacement data for old and new model cars is mailed free on request by the Dalton & Balch Company.

ROBERT BOSCH MAGNETO CO., New York, N. Y.—The Robert Bosch Magneto Co. presented their full line of electrical and mechanical apparatus. In addition

to magnetos the line comprises magnetic vibrating horns, spark plugs, mechanical oilers, spotlights, headlamps, sidelamps, starting motors generators ignition generators Ford and Fordson magneto outfits impulse starter and flexible couplings and adjustable flexible couplings. The products produced by this firm are similar to the line of the original factory at Stuttgart, Germany. Several models of generators and ignition generators are on exhibit using the voltage regulation method of output control. Special four, six, and eight cylinder magnetos of the two and four spark type were featured in still and running exhibits.

PINES MANUFACTURING CO., Chicago, Ill.—The attention drawing feature of the Pines exhibit was the gold plated Packard installation of the Winterfront. Several other installations in the stock finishes were on display and the Packard installation was shown in operation of closing and opening. The Pines spare tire lock and the Pines locking wheel comprise the full line of automotive merchandise put out by this concern. The three products are built for replacement on any car regardless of make or model, the air-cooled car, of course, excepted. The Winterfront, which has been described previously in MOTOR AGE is an automatic thermostatically operated shutter for installation in front of the radiator.

STEEL PRODUCTS CO., Cleveland, Ohio—Two plants of the Steel Products Co. are devoted to the manufacture of automotive merchandise. The Cleveland plant at the present time is engaged in the production of king bolts, tie rod bolts, shackle bolts, tappets, piston pins, and ball studs. The Detroit plant is devoted to the following items of automotive merchandise: drag links, tie rods, starting cranks, brake rod assemblies, and clevises. It was stated at the booth that the new line of Thompson Silcrome valves which are produced at the Cleveland plant is gaining wider adoption as regular equipment this year than ever before.

JOHN C. HOOF & CO., Chicago, Ill.—The firm listed above has withdrawn from the jobbing business and is now engaged in manufacturing and manufacturers agents activities. The line consists of Textolite timing gears, Intra valve tappets, Fabroil tappet adjusting screws, Guay interwoven clutch discs, Oakley engine valves, and the Raffay sleeve puller and Raffay sleeve contractor for Ford rear axles. The exhibit includes several samples of the various products and exhibits of the Textolite gear in consecutive stages of construction. This form supplies a comprehensive catalog and also a valve timing data sheet which gives the correct valve timing for all American cars from 1912 to the present date.

EAGLE OTTAWA LEATHER CO., Grand Haven and Whitehall, Mich.—A comprehensive display of upholstery leather in every conceivable shade was the outstanding characteristic of the Ottawa booth. Salesmen and officials assigned to this booth gave interesting

talks concerning the history, processes and marketing policies of their firm.

PETROLEUM MOTORS CORP., Rockford, Ill.—The Petroleum double piston engine has been described previously in this magazine and this engine is the sole product of the firm. The current engine which represents considerable refinement over its predecessor is known as the Model A Type J. The Hendrickson truck carries this engine as regular factory equipment and according to officials the firm is doing considerable replacement business.

C. A. TAYLOR TRUNK WORKS, Chicago, Ill.—Organized sixty-five years ago the Taylor Trunk Works is well known to the trunk buying public. A full line of automobile trunks, for inside running board and rear of body installation, is manufactured in quantities for factory equipment and was on display.

Buick, Willys, Maxwell and Nash are among the volume producers supplied by this organization. The replacement line covers all makes and a special tire carrier and the trunk rack has been developed for trunk installation on the Ford.

CHAMPION PNEUMATIC MACHINERY CO., Chicago, Ill.—Main bearings of the ball type features the new line of Champion air compressors. Several models of single and two stage compressors are built and the line is rounded out with a combination two stage automatic compressor and buffing lathe combined. This latter model incorporates the conventional buffing wheel vertical arbor which is belted to one side of the compressor motor. A combination air and water stand and a full line of air compressor accessories are listed in the Champion catalog. Pipe fittings, gauges, valves, automatic controllers, and tubing are a few of these accessories.

AMERICAN CHAIN CO., Bridgeport, Conn.—American Chain Company originators of the Weed anti-skid chains are engaged in the manufacture and selling of a general line of automobile accessories. The line at the present time consists of Weed license brackets, Weed bumpers, Campbell cotter pins, cut out chain, blow out chains, tire lock chains, automobile sling chains, chains for towing and the Weed chain jack. The exhibit in the Coliseum gallery consisted of a display of the various products with particular attention directed to the line of Weed chains for balloon tires.

Sales and Engineering Organization of the **H. A. DOUGLAS MFG. CO.**, Bronson, Mich., **CASKEY DUPREE CO.**, Coldwater, Mich.—The trade mark of the products manufactured by these two concerns is "HAD." They are not manufacturers agents but a consolidation of the sales and engineering organizations of the two companies listed above. The line of both concerns is fundamentally electrical and 70 per cent of the output is for factory consumption. Automobile Ediswan type socket and fittings, inspection lamp assemblies, dash lamps, parking lights, switch panels, switch keys, fuse blocks, switches, and replacement instrument board panels constitute the line of the two companies. A com-

plete catalog with equipment data is available on request.

BUNNING COMPRESSOR CO., Holmesburg, Philadelphia, Pa.—This firm builds a full line of compressors of a capacity suitable for garages, etc. Tank units are available in six different sizes, portable units in three sizes automatic tank units in four sizes, compres or units only in four sizes, and three styles of gear driven compressor and motor assemblies. The construction of all Dunning compressors is such that only three moving parts are used.

GISHOLT MACHINE CO., Madison, Wis.—The Gisholt line for 1924 remains practically unchanged. This firm recognized as pioneer builders of machinery have always supplied considerable of their merchandise to the automobile manufacturer. Lathes, turret lathes, dynamic balancing machines and other special machine tools have constituted the main line for several years.

The Du-All grinder is carried over for 1924 and incorporates several improvements as compared to the previous model. These improvements are patented under date of 1923 and although they have improved the performance of the machine it retains substantially the same constructional characteristics. The machine is portable, and has a vertical wheel spindle.

ALEMITE CO., Chicago, Ill. The above named firm is the selling organization for the lubricating devices manufactured by the Bassick Co. A complete lubrication service is furnished, including plans for lubricating stations, grease specially adapted for the Alemite gun, grease gun fillers, grease guns, and replacement fittings for the installation of Alemite system on old cars. The Alemite all metal spring cover designed for the permanent lubrication of automobile springs is an addition to the line and is sold by the various Alemite district organizations.

The Alemite exhibit in the Coliseum gallery was one of the centers of interest and consisted of a miniature reproduction of a complete lubrication station. This small scale station was fully equipped with the well known Alemite merchandise and includes a greasing rack and water and air tower.

BUNTING BRASS AND BRONZE CO., Toledo, Ohio. Bunting Brass and Bronze Company is considered one of the largest producers of finished bushings in the country. The specialty of this firm is service made possible by a district stock of more than 10,000 bushings instantly available at each of the Bunting direct branches. Although the main line consists of bronze and alloy bushings, the organization also manufacture and sell a complete line of babbitt faced engine bearing bushings.

BROWN & LIPE GEAR CO., Syracuse, N. Y. The above firm is acknowledged as the builders of the first selective transmission in the United States. As old as the industry itself, the Brown Lipe organization has developed devices which are found as standard equipment on many cars and trucks. The line at the present time consists of a full line of

transmission gears, complete transmissions for trucks and tractors and passenger cars, single and multiple plate clutches, transmission control assemblies.

Among the recent developments of the Brown Lipe company are the seven speed transmission for trucks and the new clutch assembly which permits conversion of a single plate clutch to multiple disk.

THE FOSTER-JOHNSON REAMER CO., Elkhart, Ind.—The Foster-Johnson Reamer Company is continuing its line of reamers and in addition has brought out a cylinder hone which is also on exhibition at the show. The F-J cylinder hone is a five bladed tool for the larger sizes and four bladed on the small. It is operated by an electric drill and can be readily attached to any ordinary type of drill. The sizes range from $2\frac{1}{4}$ in. up to $4\frac{1}{2}$ in. with large and small size shanks. The prices range from \$27.70 to \$28.75 and the stones list for \$1.40.

THE AUTO-HONE COMPANY, Buffalo, N. Y.—The Auto-Hone Company showed its new adjustable crankpin tool, which it is claimed, has been adopted for service by a large number of motor car and truck manufacturers. The device is known as the HaLee tool and is claimed to return worn crankpins to roundness and straight bearing. The blade cuts the full width of the bearing and fillets and is said to leave a smooth polish finish. It is a hand tool. The $1\frac{1}{4}$ to $2\frac{1}{4}$ in. size sells for \$55 and the 2 to 3 in. size for \$65.

In addition the Auto-Hone Company has bought out the plant of the H. A. Lee Company of Kansas City together with the rights for the Lee bearing boring bar and is moving this equipment to Buffalo February 1.

DUNHAMETER CORP., Chicago, Ill.—The Dunhameter was shown at the Chicago show in wing and bar models. These are new departures and are added to the line of the Dunhameter Corporation. This device, as will be remembered, is mounted on the radiator cap and flashes a warning light when the engine overheats. A green light is in operation at normal temperatures and a red light comes into action when the engine overheats.

MOTOR PRODUCTS CORP., Detroit, Michigan.—The pneumatic accelerator for Fords manufactured by Motor Products Corporation was on exhibition at the show. This device consists of an air valve located below the dash on the steering column. It is operated by air pressure controlled by the foot on a bulb near the pedals. When the foot pressure is increased the valve opens the throttle. Installed without any drilling.

ERNEST HOLMES CO., Chattanooga, Tenn.—The Holmes Auto Wrecker, designed to be mounted on service wagons, is intended to meet any kind of emergency repair work necessitating the lifting or towing of badly wrecked cars. It incorporates a patented draw bar coupling which enables the service car to take a wrecked car in tow without oscillation. It also has a gear and windlass arrange-

ment for lifting. There are two derricks mounted on opposite sides of the service wagon designed to act together when their respective booms are coupled at the rear for towing disabled cars and to oppose each other when salvaging cars or lifting heavy objects.

THE HALL CYLINDER HONE CO., Toledo, O.—The Hall company showed a hone designed for refinishing cylinder hones. The device is featured by containing but one spring, which is adjustable to increase or diminish the tension, according to the diameter required to be ground. The pressure is applied to all four stone carriers through the medium of cantilevers which equalize the pressure. The hone is self-centering and it is claimed it will center itself in a true circle, forcing the four honing stones against the cylinder wall with equal pressure.

GLOBE MANUFACTURING CO., Battle Creek, Mich.—The Globe Manufacturing Company showed its line of Simplex Two-Stage air compressors. These are made in a full range of sizes suitable for service station use. It is made in units suitable for motor or line shaft drive. The compressors are made as a single unit or are provided as complete motor driven automatic airplanes. Practically any combination desired may be secured to take care of the needs of any type of service station or garage.

INDIANA PISTON RING CO., Hagerstown, Ind.—The Perfect Circle ring, which is well known in the industry, being standard equipment on approximately 15 passenger cars, and about 30 trucks and tractors, were on exhibition at the Chicago show in both the plain and oil regulating types. The oil regulating rings have an annual oil groove about the periphery of the ring with slots for oil drainage to the inside. The rings are being sold for replacement for \$1.00 each and are made suitable for $\frac{1}{8}$, $\frac{1}{16}$ and $\frac{1}{4}$ in. grooves.

L. P. HALLADAY CO., Decatur, Ill.—The Halladay company, which has been well known for its bumpers, has added a Ford shock absorber to its line, selling for \$14.00 per set of four. The shock absorber is known as a Spring Cushion and is mounted on the upper pin of the regular Ford shackle. Minor inequalities in the road are taken care of by the coil spring, which is a part of this shock absorber. Large inequalities or obstruction are absorbed by the device, which acts as a rebound control.

MANZEL BROS. CO., Buffalo, N. Y.—The Manzel Brothers Company is continuing the hydraulic shock absorber which has now been on the market successfully for two years. This device, which is familiar to readers, controls the hydraulic resistance by means of automatic valves which govern the passage of oil between the inner and outer chambers of the absorber and automatically proportion the resistance to the intensity of the recoil. The device sells for \$90 per set of four.

THE EATON AXLE & SPRING CO., Cleveland, O.—The Eaton company has augmented its line of bumpers to include

wing types suitable for rear protection and at the same time providing access to the spare tire or tool box which may be mounted on the rear. This new wing type of bumper differs from other wing types in that there is a complete transverse bar which passes behind the spare tire. This bar is out of the way but performs the function of tying the wings together for lateral stiffness. This new type of bumper sells for \$12.00 in black enamel or \$14.00 nickel plated. A complete line of the standard types of bumpers suitable for all makes of cars is also carried.

METAL STAMPING CO., Long Island City, N. Y.—A new type of bumper has been added to the Lyon line manufactured by the Metal Stamping Company. This is an End Fold type made in either parallel bar or elliptic form. The construction of this bumper is unique in that the continuous ends give the effect of a solid one-piece construction. The folding over of the ends of the bar is claimed to add to the appearance and increase the strength. The parallel bar bumper is made in 1½ and 2 in. widths of heat treated oil tempered steel. The DeLuxe model is a broad face design also having the folded over ends. The prices on these models range from \$19.50 to \$28.00.

PERFECTION HEATER AND MANUFACTURING CO., Cleveland, Ohio—A line of heaters adapted to all styles and makes of cars was exhibited by this company. The exhaust gas is used directly and carried up into the passages of the heater, then carried out again and discharged into the open air under the car.

A new product of the Perfection Heater and Manufacturing Co. is the Swan System for Ford cars. This comprises a manifold designed to give equal gas distribution to all cylinders, which it is claimed gives a number of advantages, among which are smoother running, greater acceleration, increased gas economy, easier starting and reduced vibration.

ROSS GEAR AND TOOL CO., LaFayette, Ind.—The cam and lever type of steering gear made by this company and exhibited at the show is coming rapidly to the attention of those who build and those who service motor cars, due to the increased leverage which this construction makes possible. The demand for balloon tires also means a demand for improvement in steering, for with greater contact between the tire and road, more force is required to turn the front wheels.

WEAVER MANUFACTURING CO., Springfield, Ill.—An extensive line of garage equipment was shown by the company. One of their products is a wrecking crane adaptable for use on a tow car. The use of such a crane on a suitably equipped car not only adds profits obtainable on wreck jobs, but also brings to the shop work which might not otherwise be obtained.

A towing pole is available as a fit companion for the crane for all have had the experience in towing with a rope of having the rear car over run the

tow line and either snarl up the line or run into the car ahead. This is prevented with a tow pole and a spring in the device absorbs sudden jolts and makes the work easy.

STEWART WARNER SPEEDOMETER CORPORATION, Chicago, Ill.—The Stewart Warner line on display at the show included a wide variety of well known accessories, among which the speedometer is perhaps best known.

Other features of the Stewart Warner line are spot lights, motor driven horns, hand operated horns, bumpers, shock absorbers and a hot spot manifold for Ford cars, designed to aid efficient burning of present day fuel. A heater using exhaust gas, a line of rear view mirrors, an electrically driven windshield wiper and an air washer are also members of the Stewart family of accessories.

THE PERKINS CAMPBELL CO., Cincinnati, New York and Chicago.—This concern makes a wide variety of fabric and leather goods, all of their product however not being devoted to automotive usage, for at the show their booth display showed a large number of brief cases as well as automotive products. From the dealer's standpoint, their line of seat covers, tire covers, radiator covers and radio cabinets is probably of the most interest.

A. C. SPARK PLUG CO., Flint, Mich.—Spark plugs and speedometers constitute the A. C. line of products on display at the show. Being one of the two largest spark plug producers in the world it is not surprising to note that the bulk of the business is devoted to factory equipment. In connection with a tremendous contract business this firm also carries on with a replacement department.

ARROW GRIP MANUFACTURING CO., Glens Falls, N. Y.—Tire non-skid chains and a full line of jacks constitute the output of the Arrow Grip Manufacturing Co. displayed at the show. The patented cross chain repair link made by this company is receiving nation wide distribution through the usual jobber channels. The new model jack known as the 302 is distinctive in construction of the base. Four rollers in the base permit of easy manipulation. When the jack is under load these rollers compress into the base giving the full area of a flat jack foundation. This type like all Arrow Grip jacks is controlled by a long handled crank.

SIMPLICITY ENGINE AND MANUFACTURING CO., Port Washington, Wis.—This concern exhibited a portable machine for refinishing cylinder bores. It operates both as a reborning machine and as a regrinding machine, attaching to the face of the cylinder block to insure perfect alignment. It is powered with a ½ h. p. repulsion induction type constant speed motor which drives the boring bar at 37 r.p.m. and the grinding spindle at 5500 r.p.m.

S. S. STAFFORD, INC., Chicago, Ill.—This concern had among its exhibits a full line of bottled and canned goods, designed for the car, however, not for

its driver. This included a black liquid tire cover, a preparation intended to protect the surface of spare tires from the action of air, light and general exposure. Its rapid repaid and engine enamel is intended for retouching purposes, where paint of the engine or other parts of the car has been damaged. Put up in suitable can there is also available cushion and top dressing, neatsfoot oil, penetrating graphite oil, generator and magneto oil, gasket cement, gasket shellac, rapid tar remover, carbon remover, radiator stop-leak, cleaning fluid, metal polish, nickel polish and a product known as "renol," a finish for the body.

NEW YORK WIRE AND SPRING CO. (Bumper division), Hoboken, N. J.—Bumpers in a number of styles and in a variety of prices ranging from \$16 to \$28, depending on the size and type were in this company's exhibit. The main feature of construction includes three bars, two located in front, and intended to take up the lighter shocks and the third located behind the first two and designed to absorb more severe impact forces. The trade name Defender is used in designating these bumpers.

WALL PUMP AND COMPRESSOR CO., Quincy, Ill.—This company displayed a sample of their extensive line of two stage and single stage air compressors. Compressed air is useful in the service station or garage for two reasons, first to provide air for tires to keep the good will of car owners, and second, to use in cleaning parts and in connection with pneumatic tools in use in the shop. The design of these compressors is well worked out and the operation is said to be exceptionally silent.

SNAP-ON WRENCH CO., Milwaukee, Wis.—This company showed two general lines of wrenches, one their socket type and the other the open end wrench. The term "snap-on" is due to the construction used in the sockets and handle. Various size sockets may be used with the same handle, and a variety of handles of different shapes are available for use in inaccessible places about the car.

THE STOVER SIGNAL ENGINEERING CO., Racine, Wis.—An unusual feature is incorporated in the line of signal lamps exhibited by this company. In addition to the stop signal which flashes when the brakes are used, the name of the car is also included, and these signal lamps may be had with name of any of the popular cars. In this way the dealer selling a stop light, not only makes a profit, but gains a running advertisement for the car he sells and gratifies the owner's desire to show to other motorists the kind of car he drives.

THE TURNER MANUFACTURING CO., Kokomo, Ind.—The Turner Manufacturing Co. exhibited a varied line of accessories. One item was a timer made in two styles. The higher priced one selling for \$3.60 includes conduit in which the wires from the coils are placed, which makes practically impossible any trouble due to shorts or grounds in the timing wires. The other timer which sells for \$2.50 is designed to employ the standard type of wiring.

Best Attendance, Spirited Buying, Mark Chicago Show

Season of Automobile Exhibitions Now Under Way Promises to Be Most Successful in History

AGAIN the Chicago show was the great buying show. It was a great gathering place for automobile dealers from far and wide. At this show the factory men entertained their distributing organizations and signed up new representatives. The show attendance, although not officially reported as yet, was undoubtedly the largest of any Chicago show and that means there was intense interest on the part of the public.

Attendance was helped by weather conditions more favorable than have usually been experienced at Chicago show time. Although zero weather prevailed on opening day, a mild period immediately followed, and the remainder of the week indicated the approach of spring. The result was an attendance which was near the capacity of the Coliseum, especially in the evenings. Every evening from Thursday on found the show floors thronged almost to the point of congestion.

Women Show Mechanical Interest

The number of women among the visitors was notable. In the evening, especially, it was noted that for almost every man there was also a woman. This proved that the show had a distinct interest for the ultimate buyers of motor cars. And it seemed that the women were just as much interested in the mechanical details revealed by cut-away chassis as they were in the fine broadcloths and velours used for upholstery in the handsome enclosed vehicles.

One manager who felt that women have not taken proper interest in his shows in the past told of provisions for 16 loud speaker radio stations in his show this year, all of which will simultaneously release the best programs being broadcast. Another told of the drawing power of a historical exhibit of the early automobile industry. Government and good roads exhibits also are being used effectively by some show managers to draw attendance.

Dealer dinners and entertainments which were held in Chicago under factory auspices were well attended. Addresses made at these meetings by factory officials indicated on earnest desire to give the dealer organizations the fullest possible details as to factory plans for the future. Among the manufacturers who entertained their dealers were Oakland, Auburn, Paige and Jewett, Oldsmobile, Hupp, Willys-Overland, Chevrolet, Stutz, Durant, Studebaker, Buick, Moon and Peerless.

The Chicago show marked the turn of the automobile show season into its most intensive period. For the next few weeks the great public from coast to coast will

have the opportunity to see on display the latest models which necessarily were viewed by a comparative few although numbering hundreds of thousands, at Chicago and New York. It is the shows that are to follow which will bring the newest in the automotive world to millions of Americans in their home communities.

Local Shows Attract Attention

The prestige and publicity furnished by the great national shows will naturally lend attraction to the local shows and following precedent of New York and Chicago there is every reason to believe that they will be more largely attended this year than ever. Such shows as have already been held under local auspices bear out this indication.

Among the shows which already have passed into history are those at Baltimore, Brooklyn, Cleveland, Detroit and Milwaukee. Reports from these important centers showed large attendance and considerable buying of cars from the show floor.

Among the large cities in which shows will be held in the near future are Atlanta, Boston, Cincinnati, Dallas, Denver, Des Moines, Indianapolis, Kansas City, Louisville, Minneapolis, Oklahoma City, Omaha, Portland, Ore., San Francisco, St. Louis and Washington.

These shows will occupy the boards this month and next and by the first of April the show season will be practically ended. By that time the most intensive selling period will be under way and the wise dealers and salesmen will be reaping the fruits of missionary work done at show time and throughout the winter.

Fewer Exhibitors This Year

A notable fact in connection with the shows this year is the smaller number of car manufacturers exhibiting. For several years the number of exhibitors has been growing smaller, due principally to consolidations and elimination of some of the weaker companies. There was a time when show managements felt rather dismayed at this tendency. For instance, at the Detroit show this year there were only 38 car exhibitors, although last year there were 56 and the year before 72. But it was found that more space was required for the 38 this year than for the 56 last year.

The same was true of the Chicago show. With about 10 fewer passenger car exhibitors than last year, more space was demanded. The reason for this is that the strong companies remaining in the field gladly avail themselves of the opportunity to display as many of their models as possible. In the shows this year the visitors come nearer than

ever before to having the opportunity to see in one gathering all the various makes and model on the market.

Finding a suitable building for the show is a problem in many large and small cities. New York this year astonished the motor world by abandoning the Grand Central Palace and moving its show far out from the center of things. The experiment proved more than successful. Out in the Bronx where a great armory was available with room on one floor for all the motor car exhibits, and quite a few accessories thrown in, the greatest show in the history of the metropolis was held. The attendance was the greatest ever and the public felt that it got only what it was entitled to when it was permitted to enjoy the view of all the cars in one grand aggregation.

Larger Space Needed for Display

Other cities have made note of New York's experience and Kansas City is going to hold its show this year in a place that some folks say is "out of the way." The dealers' association in the Missouri city has the opportunity to use a great exhibition building built for live stock shows out in the packing house section. Here again immense floor space will provide the opportunity to have all car exhibits on one floor. In St. Louis the show this year will be held at a point some five or six miles removed from the downtown district. The erection of a new manufacturing building which has not yet been occupied afforded the dealers' association the opportunity to use it for the show this month. St. Louis, however, has held other shows in the same locality, and knows that the visitors will go there.

Other word comes from St. Louis that the efficient dealers' organization there has provided for the future in a handsome manner. When the city of St. Louis voted not long ago to issue \$86,000,000 in bonds it authorized the expenditure of part of this money for construction of a great public market place. Through the influence of the automobile dealers' association the city authorities have been induced to make of the second floor of this market place a huge municipal garage which will be suitable for future automobile shows.

The question naturally arises, "What about the future of the Chicago show?"

The old Coliseum is inadequate. The make-shift arrangement of putting part of the show in the nearby armory is not at all satisfactory to the public or to the exhibitors. So, of course, the industry would welcome a progressive step that would enable the Chicago National show to be made fully all that it should be.

Ultra Fashionable Bodies and Chassis Shown at Annual Chicago Salon

American and European Manufacturers Display Excellent Examples of Fine Coachwork. Fabric Covered Bodies Arouse Interest.



A glimpse of this year's Chicago Salon, which was held at the Drake Hotel. The chassis in the foreground is the Locomobile and the sporty roadster also is a Locomobile

TRANSPORTATION with distinction—in a measure describes the motor cars and made-to-order bodies shown at the Automobile Salon held at Chicago last week simultaneously with the automobile show. The supreme achievements in design, engineering and master workmanship applied to materials of the highest grade are embodied in the elegant chassis and bodies which were shown.

Transportation with distinction—because any one of the cars shown is the type which will cause one to give a second look. Custom-built cars are the tailor-made cars of the industry. There is always the "no two alike" atmosphere about them, because rarely does one purchaser of such a car want identically the same things as another. Chassis may be the same in many cases, but it is in the bodies that we find unlimited latitude for the designer and coach builder.

To give some idea as to the degree of fineness of the accessories and fittings for these ultra-fashionable cars we cite

the case of Mercedes as regards the headlamp lenses. Those familiar with cameras know what the Zies lens stands for as high a quality as is obtainable. When we see the name Zies on the glass of motor car headlamps, as in Mercedes, we get some idea as to the care with which the product in general has been built.

Trend of Design Seen

The salon always affords an excellent chance to study some of the things which, although they are more or less special on the cars shown, may nevertheless become more and more common in cars of a lower price range. For example, several of these high priced cars at the salon were shown without splash aprons for the radiators. This leaves the forward end of the frame, cross member, front axle, starting crank fixtures, etc., exposed and, inasmuch, as these parts generally are finished all over and carefully painted, they rather enhance the front end appearance of such cars. On most American cars it is customary to cover

up much of the car with splash aprons, and in many cases an inspection will show that this has been done to hide some rather ugly construction in addition to serving as protection from mud and water.

On the custom-built cars it seems the polished radiator shell has come to stay. In nearly every instance the radiators of the cars at the salon were of polished aluminum, nickel plated or German silver. Also, in most of these expensive foreign and American cars it is customary to place the water jacket temperature indicating gage on the instrument board, which leaves the radiator cap free. In the case of Mercedes, Rolls-Royce, Isotta-Fraschini, Minerva and one or two others the radiator cap is ornamented with a figure or emblem long associated with that particular make of car.

Four American and five European chassis makes were on exhibition. The foreign chassis were Mercedes, Minerva, Rolls-Royce and Isotta-Fraschini. The American manufacturers were Cunning-

ham, Stevens Duryea, Lincoln, Packard and Locomobile. Six body builders, Cunningham, Dietrich, Fleetwood, Graff, Merrimac and Pullman showed their products. There were driving lights on exhibition by the Lorraine Corp., Chicago and balloon tires by the Vogue Rubber Co.

If the bodies at the salon offer any suggestion as to possible trends, particularly as far as closed bodies are concerned, it would be apparent that inside-drive types are going to replace the former type of limousine. Practically all the town car bodies shown were of the Berlin type, that is with the dropping glass partition between the driver and the passengers. Efforts have been made in many of these bodies to have the glass partition drop entirely out of sight instead of having part of the glass exposed when the window or partition is down.

Fabric Body Again Shown

The fabric covered body shown at the Commodore hotel in New York during the New York automobile show was on exhibition again. The Meritas fabric was demonstrated from the standpoint of durability on the same Packard car on which it was shown a year ago. In the meantime the car has been driven over 20,000 miles and has had rather rough usage. It was difficult however, to detect any sign of wear or usage.

Cunningham showed a six-passenger sport car with steps instead of a running board. The paint work on this car was unusual. It was gray with a belt line of cane. The cane of course was painted on, but gives a suggestion of wicker furniture and country club atmosphere.

Cunningham also had a car called the Golf Roadster, which is an ingenious four-passenger car and is proving quite an attraction. It is a roadster type, with entrance to the two rear seats through a

passage between the front seats on the order of the old cloverleaf type. On each side of the two rear seats, and contained in the side walls, of the car are compartments for the storage of golf bags. Behind the right rear seat and inside the boat shaped rear deck there is storage for bags or grips.

The Fleetwood exhibit included a town brougham on a Deusenberg straight eight chassis. The car was painted black with a gold stripe. It was upholstered in Wiese's Windsor weave. There was also an inside drive limousine on a Packard single eight chassis. This was a six-passenger body painted Fleetwood green, a sort of light olive. This body as well as the other closed bodies in the Fleetwood exhibit were equipped with thermostatic ventilators. These ventilators are ingeniously formed around the frame of the dome lights and are concealed except for close inspection. This entire body weighs 1050 pounds according to Fleetwood Body Corp. officials. It is constructed of 14 gauge sheet aluminum and sells for \$6875. It is painted grey and the leather upholstery in the front compartment is finished in grey to match.

Fleetwood also showed an Isotta cabriolet with loose pillow type cushions for upholstery. These are on top of the regular upholstery but give an added touch of comfort and are softer than it would be possible to make the regular seat upholstery.

A good example of inside drive limousine design was shown on a Lincoln chassis. This car was painted brown and grey, contrast being secured by using light and dark shades. Polished hardware was used with Sheffield finish. The leather in the front compartment was colored to match the trim. The car sells for \$6900.

R. H. Dietrich showed a Pierce Arrow

roadster of unusual attractiveness. It was painted satin gray and the running board was natural wood with nickel strips. The rear deck was a boat type with a rumble seat. Graff showed a Rolls Royce landau with a body done in maroon and black.

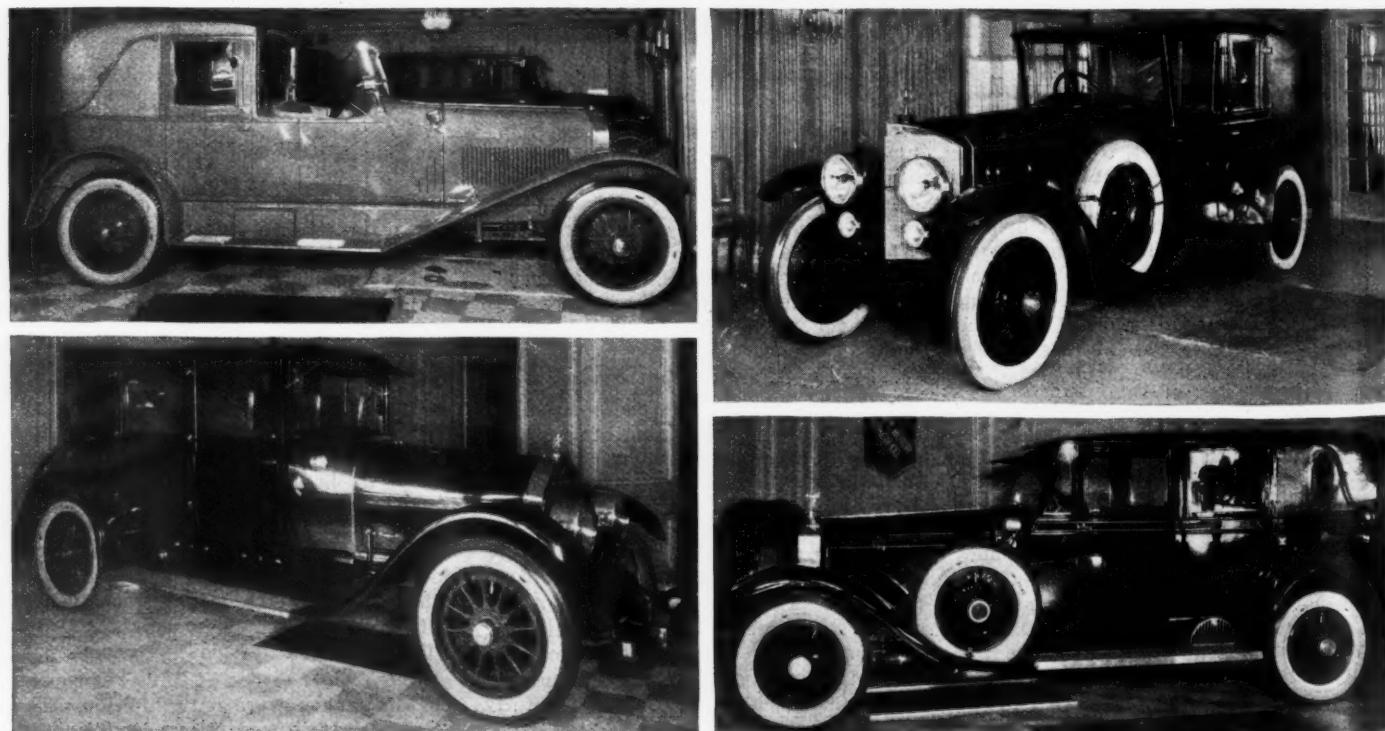
In the touring car class one of the most distinctive exhibits was a five-passenger phaeton in dust-proof gray with leather of the same shade with a sort of striped or corduroy effect which gives the leather the appearance of cloth at a casual glance. Minerva showed a chassis and an inside-drive car painted black with a red stripe and upholstered in Bedford cord.

An all-steel body which follows Pullman railway car practice in its construction was on exhibition for the first time at the Salon. This body has been under development for over a year and represents an experiment to show what can be done in all-steel construction for automobile bodies. Pullman company officials state that they are well-pleased with the body and are convinced that the cost can be made equal to wood frame bodies in moderate qualities and lower in large quantities.

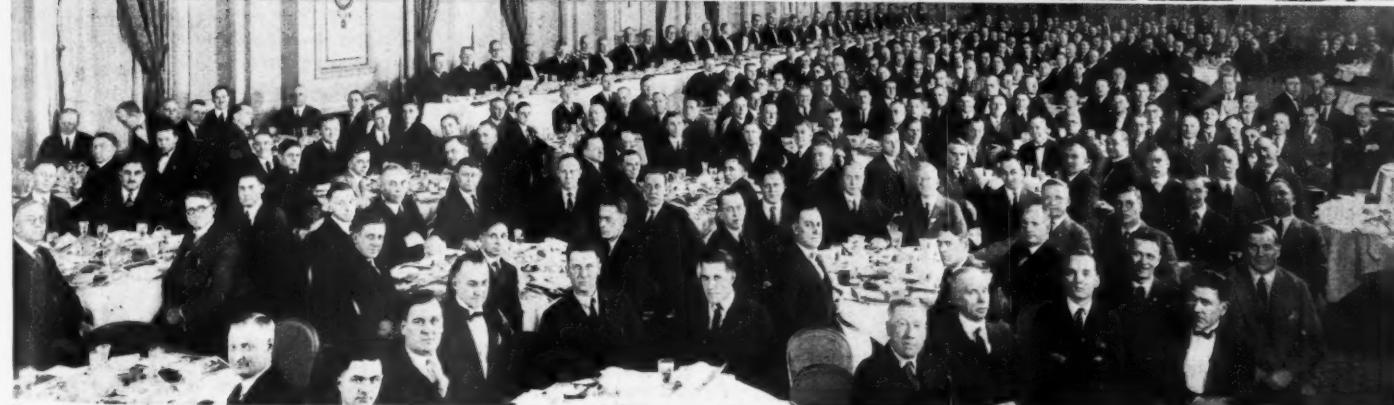
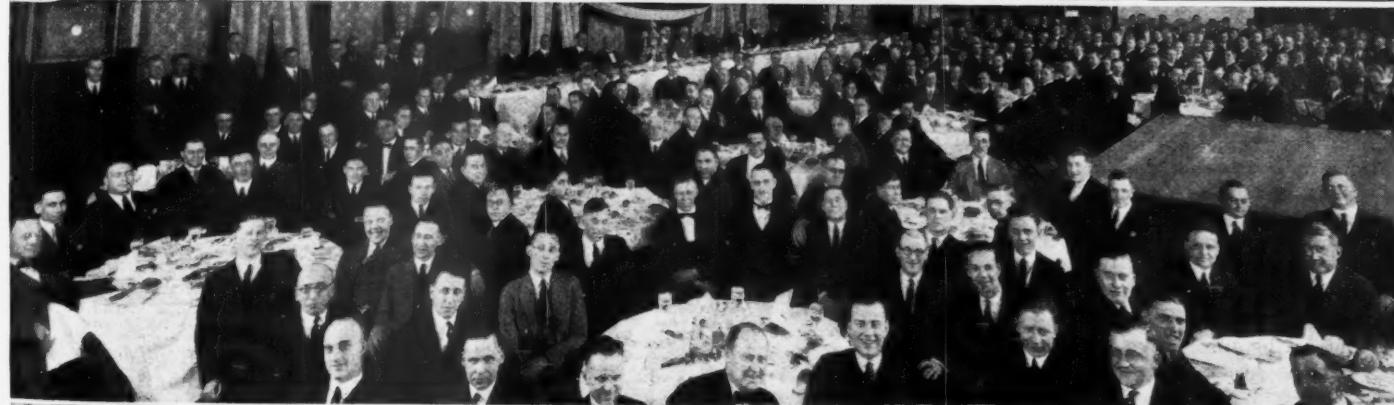
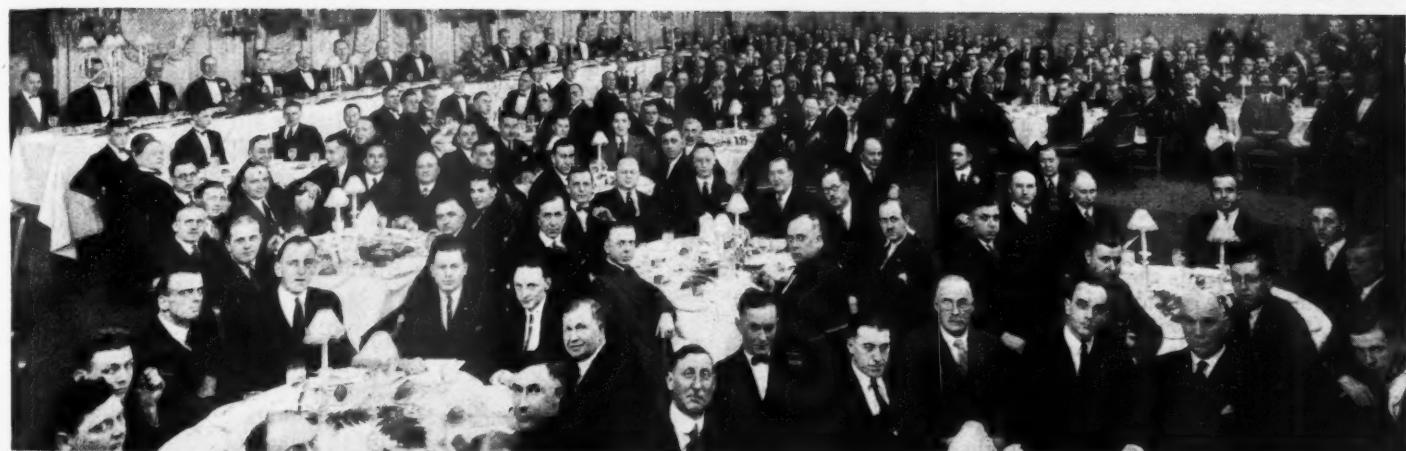
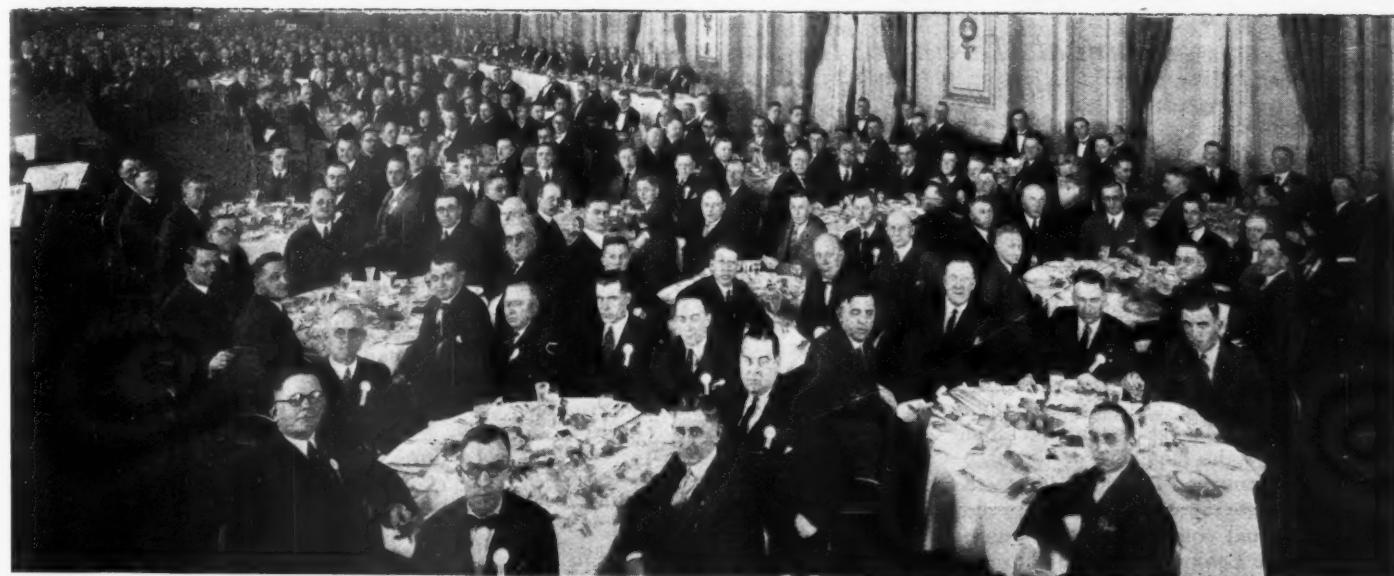
Pullman All-Steel Body

Probably the most interesting feature of the body, which is built up entirely of pressed steel parts over pressed steel structural members, is the fact that the body is a rigid unit in itself and does not depend on the chassis for any of its stiffness. In fact, it is claimed that that quality in the chassis is augmented by the structural strength of the body.

The particular all steel body exhibited at the Drake Salon on the Packard chassis is claimed to be 50 pounds lighter than the ordinary automobile enclosed body.



Four cars exhibited at the Salon. Upper left, Isotta Fraschini; upper right, Mercedes; lower left, Stevens Duryea; lower right, Rolls-Royce

Some Banquets During the Chicago Show Week

Photographs by Kaufmann and Fabry, Chicago.

Top to bottom: N. A. D. A. Frolic; Paige-Detroit Motor Car Co. Dealers' Banquet; Annual Meeting, True Blue Oaklanders; Oldsmobile Dinner for Western Dealers

Radio Brings the Answer to Electrical S. O. S.

Annual Meeting of the Automotive Electric Service Association Unfolds the Answer to the Question of Getting Winter Business

By A. H. PACKER

A WELL-DEFINED activity of the Automotive Electric Service Association has been directed toward augmenting winter business in the electric shop at a time when the whole automotive maintenance industry has always experienced somewhat of a letup. Although the increase in the use of automobiles in winter has to some extent overcome this condition, the members of the association have continued to look for methods of entirely eliminating it.

At the annual convention of this association at the Congress Hotel during the week of the Chicago Automobile Show the possibility of selling and servicing the radio equipment in automotive electric shops was discussed and found much favor, especially in view of the winter slack and the summer rush which ordinarily marks the automotive electrical business.

In the radio field, however, the conditions are just the opposite, for reception is far better in winter, while in summer, there is the call of the outdoors taking the most ardent fans away from the head phones and the loud speakers. Such is the "Jack Sprat" plan of nature awaiting only discernment and putting into practice to level off the business valleys into which many have fallen, never to rise again.

V. W. Collamore of the Atwater Kent Mfg. Co. presented the various reasons that pointed to the automotive electrical service department as the logical outlet for radio products. True, it is that radio stores, cut rate and otherwise, have sprung up everywhere, but equally true is that a business not founded on service can not long survive. This is a fundamental law, demonstrated in the automobile industry, and it will be again revealed in the sale and servicing of radio equipment.

Whether the automotive electrical service stations become the ultimate outlet for radio sets depends on the initiative and foresight of those in this business, but it is certain that no other line of business has the foundation so admirably suited to this branch of electrical work.

Electricians working on starters and ignition may not be expert designers of radio sets, nor do they need to be.

The profits are not found in trying to compete with the ten cent stores and stocking a million kinds of microscopic parts, but in picking out a well known, nationally advertised product which will sell easily and require the minimum amount of service to keep it sold.

That is where the money lies and in the selection of a good line the electrical dealer will either sink or swim.

Radio Gathers in Electrical Dollars in Winter

Are you making money on radio this winter or sitting with your feet on the stove waiting for spring electrical business? That's what they wanted to know at the A. E. S. A. meeting during the Chicago Auto Show. 'Twas the new president himself who said that some of the electrical service men had made more money in the last few months than they had ever seen before. The automotive electrical man is capable of handling this work and it turns his winter slump into a peak of profitable business.

Service on sets of well known makes, then becomes a matter which the ordinary automotive electrician can handle with ease. Not his duty to design the set. That the maker has done and done well. Broken wires, reversed batteries are simple things, but stumbling blocks to the user, and here the service station can easily supply service that gives results, makes friends and lays the foundation for substantial sales.

According to a government report on the growth of radio business two million dollars worth of equipment was sold last

year and that is but the start. The growth has been remarkable, somewhat similar to that of the automobile industry, and significantly pointing to the fact that those who have grasped the plums in the motor car field will be waiting under the trees for the fruit of work well done in merchandising radio.

"But," said one, "the radio principles differ greatly from those of the motor car equipment, and I venture to say that hardly a man here would attempt to explain the difference between a push circuit, a pull circuit, a reflex or a heterodyne."

The answer to that came from D. T. Swain of Omaha, where radio sets are handled by the Auto Electric and Radio Corp. "Send five men to college for a year. Defray all their expenses and you will still make enough to have it pay."

But the sale of radio was not the only constructive suggestion presented at the convention. The possibilities in servicing equipment on trucks was well presented by C. P. Shattuck of the Chilton Co.

Figures were presented showing, among other things, that recent rapid production in passenger cars had been practically equalled on a percentage basis by the commercial vehicles, and at the same time the use of starting and generating equipment was also growing, as shown by the following table:

Year	Trucks equipped with starters	
	Per cent	Per cent
1916	11.3	
1917	11.9	
1918	22.6	
1919	22.7	
1920	25.3	
1921	29.8	
1922	33.0	
1923	43.0	

A summary of the equipment of various trucks taken according to capacities was as follows:

Capacity	Having generators or starters	
	Per cent	Per cent
1000 lbs.	100	
1500 lbs.	77	
1 ton	81	
1½ tons	80	
2½ tons	48	
2 ton	43	
3 ton	32	
3½ ton	44	
4 ton	33	
5 ton and over	31	
Tractor types	25	
	50	

Average of all trucks... 43.3

P. J. Durham, the new president of the Automotive Electric Service Association



At the completion of 1923 The Commercial Car Journal listed 43 makes of motor buses and 52 models, which were 100 per cent equipped with starting, lighting and ignition.

It has often been said that figures do not lie, but the statement has also been made that liars can figure. The statistics just given thus show an opportunity, but it is up to the owner of the electrical service station to show the operator of the truck that it is to his advantage to have his electrical work done by the specialist.

Work on trucks is different from work on a passenger car for the reason that the passenger vehicle may be left in the morning and called for at night, while a truck left for this length of time would cost the owner from \$15 to \$50, or perhaps more, in lost earnings. Service stations are not all operated as efficiently as they should be, and the truck operator may at times have experienced delays in getting certain electrical repairs made. This has made him suspicious as to the advisability of turning work of this kind over to the electrical station.

This means an individual problem in each territory to sell the truck users on the service available, and the shop must make good on the promises made.

Because of the costliness of lost time, it is common to find owners of truck fleets operating their own shops and having men fairly capable for doing necessary work. Commonly required parts are kept in stock and when a unit fails to function, it is often removed and another put on so that the truck may continue on its way.

This means that real study must be given to the truck operators' problem, perhaps replacement units, repaired and tested, being stocked or sold to the fleet owner, so that the electrical work that comes to the shop will be in the form of units only, which may be put through without rushing, thereby making profitable operation of the shop work possible.

"And how can we meet the back alley type of competition," was a question Mr. Shattuck said he was often called upon to answer. "My answer is, by better service than the other fellow can give." No question but what that is the answer and also the answer to the competition from the car dealer, capable or otherwise, who endeavors to handle electrical service, for the question of the appearance of the shop and the men may decide the car owner as to the establishment he will patronize.

F. A. Oberheu gave the answer to this question of appearances. He said he would feel safe in issuing a challenge to the police to collect their choicest bunch of yeggs and stand them in a row. He would pick out an assortment of electricians from almost any automotive service station and also stand them in a row, and from the standpoint of personal appearance the yeggs would have it all over the representatives of the electrical service business.

"Guilty," was the nearly universal admission to this charge of ill-kept shops and personnel. Mr. Durham confessed that time and again he had undertaken to uniform his men and keep them presentable, but under stress of work, the necessary laundering of garments would be neglected and conditions would lapse before he knew it. Others told substantially the same story until the answer was supplied by E. R. Hardy of the Electrical Equipment Co. of Phoenix, Arizona, who told of his method of handling the problem. "Every battery man is uniformed in flannel shirt with khaki pants and brown puttees," he said. "One



D. W. Burke, retiring president of the Automotive Electric Service Association

uniform he buys and one we buy. Every week one uniform is cleaned at our expense and he wears the other. The electrical men are attired in white coats coming to the knee and the arrangement with them is similar. In this way we can meet our customers more as technical experts than as laborers, and the effect fully justifies the effort involved."

The election of officers resulted in the selection of P. J. Durham, of the P. J. Durham Co. of New York City to serve as president, but as it happened the choice was made while Mr. Durham himself was busy trying to connect with a telephone call from New York. When the news was gently broken, the newly elected president debated both with himself and others the question of accepting and was finally prevailed upon to skipper the ship for the coming year.

In opening the meeting on the following day Mr. Durham made it quite clear that in accepting the honor thus thrust upon him he fully intended to thrust a goodly part of the work on the other governors, the officers of the association. One of the chief activities which he mentioned as desirable to extend for the coming year was the formation of local

branches of the association which could carry on intensive work to better advantage than would be possible with an organization having its members scattered all over the United States and Canada. In this he was assured that co-operation would be extended as far as local conditions would permit.

Another possible source of profit to the automotive electrical service station as well as an activity which would benefit the whole motor using public was outlined by the general sales manager of the American Flatlite Co.

He brought out the point that poor headlamp adjustment is one of the weak points of the present motor car, and that headlamps are rarely adjusted properly, partly because of negligence on the part of the owner and partly because service stations have provided no facilities and made no attempt to do this work.

Perhaps the owners' negligence can be accounted for by the fact that at night when trouble with the lamps is experienced, there is no shop open where corrections can be made, and when visiting a service station in the day time, the trouble is forgotten.

This would seem to be an opportunity for the clever service salesman to arrange the drive-in in such a way that cars stopping for trouble analysis are facing a sheet or whitened wall on which the headlamps rays may be projected. In this way the service salesman or contact man could with a turn of the switch handle, see if the lamps were properly adjusted or not, and add many an extra job, to keep the shop both busy and profitable. Lamp adjustment as brought out by S. Gordon T. Parks of the Magneto and Machine Co. of Baltimore, Md., can also be profitably carried out in conjunction with the police department, especially when a drive is on to check up on violations in the lighting ordinance.

The officers of the Automotive Electric Service Association consist of a board of 12 governors, four of whom are elected by this board to fill the offices of president, vice-president, secretary and treasurer. At the first meeting, which was for members only, five governors were elected to take the place of four retiring and to fill one vacancy, the newly elected members being as follows: Victor Nielson, Boston, Mass.; Harry Hearnen, Trenton, N. J.; P. J. Durham, New York City; B. Frank Hall, Atlanta, Ga.; G. J. Beattie, Toronto, Canada.

Governors remaining on the board were as follows: H. F. Bush, Philadelphia, Pa.; E. S. Cowie, Kansas City, Mo.; Arthur Jones, Chicago; H. B. Noyes, Omaha, Neb.; Adolph Wagner, Indianapolis, Ind.; F. W. Duffeck, Toledo, Ohio; Gordon Prentice, Seattle, Wash.; C. T. Stevens, Minneapolis, Minn.; R. H. Bechtol, Cleveland, Ohio.

From this board the following offices were filled: President, P. J. Durham; vice-president, E. S. Cowie; treasurer, F. W. Duffeck; secretary, Harry Hearnen.

MOTOR AGE

Reg. U. S. Pat. Off.

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Thursday, February 7, 1924

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Letters

A MAN is known by the letters he writes!" Whoever said these few words, said them a long time ago and, unlike so many other antique words of wisdom which have lately been torn apart and found weak in the knees, this bit of grey matter stands out like warped paint on a hood.

A man IS known by the letters he writes and we've just come to the conclusion that a certain automobile dealer whom we thought to be a rather interesting person is anything but that. Our reason for so thinking, is his letters. Better that he leave them alone altogether than to send out the ones he does.

We are not going to condemn everything because once or twice we have taken the time to read these letters and there is a heap of good, solid stuff in them—the kind of stuff that business is built on, but its the production of those letters that makes them hard to read.

What sort of duplicating instrument is used we do not know, but it is time he invested in a new one or, better still, typed each letter individually. Being careful about one's letters is as important as being careful about one's self. In fact, it is more important. When you are there in person you can defend yourself, but when your letter

is there, it has just its own message and its own appearance to stand on.

Neglect one of these and the whole effect is lost. Make your letters mean something more than a mere sales talk. Make them neat, clear samples of good advertising.



If your shop needs new equipment to care for the coming spring business now is the time to get it.

**Turnover and Empty Shelves**

THE profit is in the turnover. That is a merchandising axiom. It has been widely and pointedly impressed upon automotive merchants, as well as others by precept and experience in the last few years. There came a time shortly after the war when the possession of a large stock of goods was the merchant's greatest liability. Inventory was no longer an asset. Too often it was a ticket to the poorhouse.

But the condition was exceptional. Business had boomed so violently for some months that every merchant believed he could sell all the goods he could get and at his own price.

It was a fallacy. And a ruinous one. Hard times and a buyers' strike came. Well-filled shelves shrunk to a fraction of their cost. The stuff had to be sold—and at a loss. Sometimes the merchant sold it—sometimes the sheriff.

From this experience the resolve was never again to be caught with a heavy inventory. All right so far as it goes. Then bright merchandising counsellors began to talk about the profit in the turn-over and traveling salesmen were able to ship most of their orders by parcel post.

The principle is all right—in moderation. The good automotive merchant, however, must not let himself be misled. Of course he wants rapid turnover. But wouldn't it be better to have a slightly excessive stock which would stimulate sales effort rather than be compelled every little while to tell the customer he is out of the wanted article? An adequate stock of goods, bought right and with due consideration of the possibilities of the market, is still an asset.



Careless and indifferent salesmen at your show booth can make your exhibit worthless.

**Purple Shoes and Black Cars**

WE all have seen them, the bright colored foot gear the ladies are wearing, but what has that to do with motor cars? Perhaps the dealer trying to make the cash register jingle fast enough to send Eleanor to college will get the point and connect the idea in some

vague way with his own business.

Shoes used to be for the purpose of keeping one's feet from being bruised or splintered, or perchance for the purpose of warmth. But those ideas are old fashioned. Now they must match the particular gown that Eleanor is to wear on some particularly festive occasion. The car dealer paying for daughter's shoes may feel he is being robbed, and yet the statement was made recently at an editors' luncheon in Chicago that shoe dealers were losing money on fancy shoes. Does it point a moral? It certainly does.

The warning should sound itself to those in the motor car industry, that multiplication of parts that must be carried in stock, without multiplying the business in proportion has a decided element of danger in it. The shoe manufacturers thought they could multiply the business with the fancy lines—and they did, but not nearly as much as they multiplied the burden that the dealer had to shoulder.

Years ago a motor car maker went on the rocks because he could not turn down an order for a special motor car. Color, body, specialities, all were made to suit the request of the purchaser—and at a price similar to that of stock cars on the market. Little did he know the cost of that car, with special engineering and supervision that would have done for heavy production.

Standardized lines that suit the majority and can be sold reasonably and at a profit will be the basis of the success of the motor car dealers of the present—and the future.



Even the groundhog believes in looking out for the future.



About Next Year's Show

THE gentlemen who have charge of the national automobile show no doubt have started already to think about next year's exhibitions. Such great events must be planned far in advance. This year's shows were successful—remarkably so. The outstanding feature was the great public satisfaction with the new location of the New York show. Visitors and exhibitors both were glad to have all the cars on one great floor.

And Chicago had a great show. The greatest ever. This in spite of unfavorable conditions which are known to have sickened the hearts of some who viewed the great New York display. It was the same old thing—the Coliseum, the Annex and the Armory. A split up show. Choice positions in the main part of the Coliseum. Some spaces in the Annex. And a corner in the Armory for those who by force of circumstances had no other choice.

The visiting public again tramped through a dirty, damp and cold alley to go from the Coliseum to the Armory. It was that or see only part of the show. Far too many saw only part of it.

Chicago has proved that it likes the national automobile show. The surrounding territory also has indicated a liking for the event. Gate receipts make the

event profitable. The gathering of dealers and prospective automobile buyers stimulates the great automobile market of which Chicago is the center.

If there is anything the national show management can do to give Chicago a show in a more attractive and comfortable setting we believe that Chicago and the central west will be duly appreciative.



*Follow up your show prospects before their ardor cools
—and before the other fellow gets there.*



Making It Go

"MAKING it go, Charlie?" asked one dealer of another.

"Always," was the reply.

"Used cars?"—This with a twinkle, a knowing smile.

"Haven't any."

"What? You haven't any used cars?"—In surprise.

"Not to-day."

"How do you do it?"

"That's easy. I make it go. Used cars hold no fears for me. They are nothing to worry about, if you handle them right. I have run up against a lot of car owners who thought they were better salesmen than I and there's only one way to handle the man who wants more than you can afford to give—let some other dealer be the goat.

"And, by the way, Ed—how does it feel to be the goat. You've taken a lot of sales away from me during the summer and fall, haven't you? Well, you're welcome to all you can get. I let only those go which won't do business my way. I see you have about 20 used cars in the lot next door. That's too bad. But some day we dealers will come to an understanding about used cars and we won't be cutting each other's throats.

"We'll make a go of it, but we'll go together."



What better valentine for the sweetheart-wife than a wonderful new motor car?



He was a versatile salesman who in one day sold both an open and an enclosed car on the weather. It was dreary and a cold wind was driving a hard rain. "This closed car is just the thing for this weather," he said and sold it. There was also an open car on hand that should have been sold long before. "A closed car is all right in this kind of weather," he told another prospect, "but this weather won't last long," and he sold the open car.

January Production Well Over 300,000

Shipping Returns Put Figure for First Month at 341,000

39 Per Cent Increase Over 1923; N. A. C. C. Carries on Tax Fight

CHICAGO, Jan. 31.—Estimates on January production of cars and trucks, based on shipping returns, as reported to the directors of the National Automobile Chamber of Commerce at their monthly meeting held in the Armory here this afternoon, show that the industry has started out at a pace that promises another record breaking year. With the returns all in save for the last couple of days, it is estimated that the January figures are approximately 341,000. This is a 15 per cent increase over the December mark and 39 per cent better than January of 1923, when the total was 244,703.

The dominating note of the directors' meeting was the excise taxes and the fight the industry is making to knock them out. This brought about the adoption of a resolution reiterating the Chamber's stand on excise tax removal and proposing to call to the aid of the N. A. C. C. every branch of the industry as well as the fifteen million car owners with a view to showing Congress the unfairness of these taxes, particularly as it is proposed to remove these taxes on other things like jewelry, etc., which had been taxed at the same time as the automobile.

The speech made in Congress by Senator James Couzens in which he declared that automobile manufacturers would rather have the surtax removed instead of cutting out the excise taxes on automobiles stirred the directors and a strong telegram was sent to Senator Couzens, calling attention to the error in his understanding regarding the position of automobile manufacturers on the tax question and asking him to help in every way to wipe out the objectionable taxes.

The Chamber does not propose to relax any in the fight it is carrying. It feels that it made a decided impression on the Ways and Means Committee. For five consecutive days a different branch of the automobile industry had a hearing, starting with the National Automobile Chamber of Commerce and being followed by the Motor and Accessory Manufacturers' Association, the American Automobile Association and the National Motorists' Association, the Rubber Association of America and the National Taxicab Association.

SHOW MANAGERS MEET

CHICAGO, Feb. 2.—The National Association of Automobile Show and Association Managers held its annual meeting during the Chicago show and re-elected officers as follows: president,

Robert E. Lee, manager, St. Louis Automobile Dealers' Association; vice-president, Herbert Buckman, manager, Cleveland Automobile Manufacturers' and Dealers' Association; secretary-treasurer, Neal G. Adair, editor, Motor World. The officers make up the board of directors, with Price Wells, president of the Louisville Automobile Dealers' Association, and H. H. Shuart, manager of the Detroit Automobile Dealers' Association.

Most of the twenty odd members of the national association attended the meeting. Those whose shows had been held reported increased attendances and buying as compared with last year.

Tentative plans were made for the usual two-day show and association management convention to be held in August this year, at Atlantic City.

S. A. Miles, show manager of the National Automobile Chamber of Commerce, was a guest at the meeting just held and at the luncheon which preceded it.

FORD AND CHEVROLET PRODUCTION

DETROIT, Jan. 31.—Ford Motor Co. production in the United States for January will approximate 170,000 with about the same total outlined for February. Production in January in all plants throughout the world will approximate 205,000 with about the same figure in February.

Chevrolet Motor Co. will build about 43,000 cars in January and will increase this total to about 50,000 in February. Totals throughout the industry indicate that January will show close to capacity operation, with general increases by all plants in February.

GILL SALES GOOD

CHICAGO, Jan. 30.—At the annual meeting of the Gill Manufacturing Co. E. E. Warfield was advanced from the position of sales manager to vice president in charge of sales, while A. L. Miller, treasurer, was also made assistant general manager. The company reported that this January has produced double the orders of the same month a year ago, while sales in 1923 were 1,700,000 rings better than the peak year, 1921.

BALLOON TIRES LOWER

AKRON, Jan. 31.—Firestone Tire & Rubber Co. has announced a 20 per cent reduction in the price of balloon tires, made possible it is said, through the lowering of production costs. Other companies are expected to meet the Firestone cut.

NEW SELDEN TRUCK

ROCHESTER, Jan. 31.—Selden Truck Corp. has announced a new 1½ ton truck to be known as the Selden Pace-maker. This new unit completes the line of fifteen Selden commercial chassis.

National Shows Will Not Give Way to Permanent Exhibition

N. A. C. C. Tells S. A. Miles to Go Ahead With Plans for 1925 Shows

CHICAGO, Feb. 1—National shows at New York and Chicago will not be abandoned, nor will there be a permanent exhibit of automotive products at Detroit, if the action of the directors of the National Automobile Chamber of Commerce has any weight with the members.

The matter came up before the meeting of the board this week but it did not make much headway. Those favoring such a radical step believed the industry would be better served by having a permanent exhibit at Detroit, possibly at the Fair Grounds, where dealers could come and look over the new models, thus obviating the necessity of holding national shows. This, however, did not meet with the approval of the directors and the plan was promptly squelched. Show Manager S. A. Miles was told to go ahead with his plans for the 1925 exhibitions.

It may be the show dates next year will be advanced a week. It has been proposed that the New York show open Jan. 10 instead of Jan. 3 and a decision in this will be made at the March meeting of the N. A. C. C. board.

No Show at Salt Lake City; Used Car Business Improves

SALT LAKE CITY, Utah, Feb. 2.—Every one is enthusiastic regarding the outlook for spring. The feeling in this respect is better than it has been for the past three or four years, at least.

There will be no show this year. The show has always been held in February but it is declared so many people wait until show time to see the new models, that it was decided to eliminate the exhibition as an experiment. In other words, it is felt that shows in the past have held business back.

The used car market has improved wonderfully in the past ten days, according to officials of the Certified Public Used Car Market, a cooperative organization for dealers.

CRANK SHAFT TO LIQUIDATE

DETROIT, Jan. 31.—Directors of the Automobile Crank Shaft Corp. voted yesterday to liquidate the company, and this action will be proceeded with immediately, the plant and equipment now being offered for sale in part or complete. The company is capitalized at one-half million dollars, of which \$350,000 is paid in. There are 9,500 shares of no par value common and 1,982 shares of preferred stock redeemable at one twenty.

"Something New," Is Cry at Chicago

Factories Prepare for Big Production in Second Month

Schedules in All Price Classes Call for Greater Output; Demand Good

DETROIT, Feb. 2.—Production will show a wide increase in February over the first month of the year but will be only a step to the real heavy production which will probably get under way in March. Manufacturers though stepping up production are avoiding any overcrowding of the market and for the most part will build only in quantities that dealers can handle in proportion to the early business of the year.

Dealers now are carrying large stocks in anticipation of the opening of the big spring selling movement and these stocks are being augmented to a considerable extent by stocks which manufacturers are accumulating at strategic distributing points. Retail sales during January and in February are expected to be larger than ever, due to the influence of the shows, good weather conditions and the sound business outlook generally.

The Ford schedule of 10,000 daily still is several months away. January production in the United States will approximate 170,000 and the estimate for February is for about the same total. Including foreign figures the Ford monthly totals will run in excess of 200,000. It is not expected by factory officials that 10,000 daily will be built before the completion of several building projects now under way, but higher totals than last year will be set up.

Chevrolet is scheduling approximately 50,000 cars in February as compared to a January total of about 43,000. The company is working toward an output of 3,000 daily in March. Durant will build about 400 cars daily at the Lansing plant, representing Star cars principally, but including some Durant fours. Gray production for the month will approximate 2,000 cars.

Heavier increases will be made in medium priced car schedules in February than in the other classes. Buick will operate at close to the 1,000 daily schedule and this figure will be approached by Dodge which has worked up to a total in excess of 850 daily. Studebaker schedules call for about 650 daily, with Hudson-Essex approximating 450 and Paige-Jewett at close to the 400 daily mark.

Oldsmobile is now operating at about 325 daily and Maxwell-Chalmers schedules are for approximately 300 daily. Production on the new Chrysler is stepping up but it will be another month before it is fully under way. Oakland is operating on a 200 daily schedule and Hupp operations are at about this same figure. Reo schedules call for about 150

cars and Speep Wagons daily and Rickenbacker will approach the 100 daily mark as the month progresses. Dort is building about 60 daily.

In the higher priced lines, Wills Ste. Claire has scheduled about 600 cars for February, an increase from about 200 in January and is due to the company getting into production on its new models. Cadillac is operating on a schedule of about 100 daily and Packard is continuing at approximately this figure, the major portion of its production being in its single six models.

BUDA BUS ENGINE

HARVEY, Ill., Feb. 1.—A six cylinder bus engine will be produced by the Buda company and will be ready for delivery about March 1. The engine is on exhibition at the Congress hotel during Chicago show week. It is a 4 by 5½ in. block cast unit, designed for unit power plant and three-point suspension mounting. The engine is designed particularly for Bus use. It has a four-bearing crank-shaft of 2½ in. diameter. All of the main bearings are of the same diameter and two of the main bearings are of the same dimensions as the lower connecting rod bearings thus giving only three bearings to service.

Customers Prefer Better Tires Regardless of Price

BIRMINGHAM, Ala., Feb. 1.—A thorough canvass of customers in the tire department of the McCormick Brothers Motor Company of Birmingham revealed the fact that the three main features in buying tires are quality, service and the reliability of the firm.

The canvass was conducted as follows: Every customer coming into the tire department was asked why he bought Firestone and Oldfield tires from McCormick Brothers. The three answers named above were the ones most often given by the customers as the reasons for their preference. The canvass was made in order to find out any weak points in the service to customers and those questioned were as frank in their criticisms as they were in their praise.

Price apparently had very little to do with the sale of tires and customers were practically unanimous in their opinion that it is better to get a standard make and grade at a first class department and have the dealer stand behind it than to get a cheaper grade of tire and be solely responsible.

According to the manager of the department, Roy Kay, the company got many good ideas for improvement in this department as a result of the canvass.

Spring Buying Season Leaps Forward at Touch of the Show

Attendance, Sales, Prospects Come in Great Bunches to the Worthy

CHICAGO, Feb. 2—Having as an opening wedge, the greatest show in Chicago's automobile history, the spring buying season has been ushered in with a rush of orders that eclipses anything ever known in this section. The show was pronounced by virtually every exhibitor as the best, from a buying point as well as from a general interest angle.

"I believe that every person who attended the show stopped at this booth," said one exhibitor, "and I am sure that every one was a prospect for some car in the show."

Attendance records for 1923 were easily equalled, if not surpassed and few, if any of the spectators, came because they wanted to see the automobile show—they came to buy. Every salesman in every exhibit who was at all "on his toes" has a list of names that will keep him busy and very much alive for many months.

Low and medium priced cars, have, of course, the biggest number of names, but the high priced cars were by no means out of the running. The extremely low priced cars did not do so well as the ones in the thousand dollar class. Four wheel brakes and balloon tires were the biggest attractions. New cars and new models ranked next.

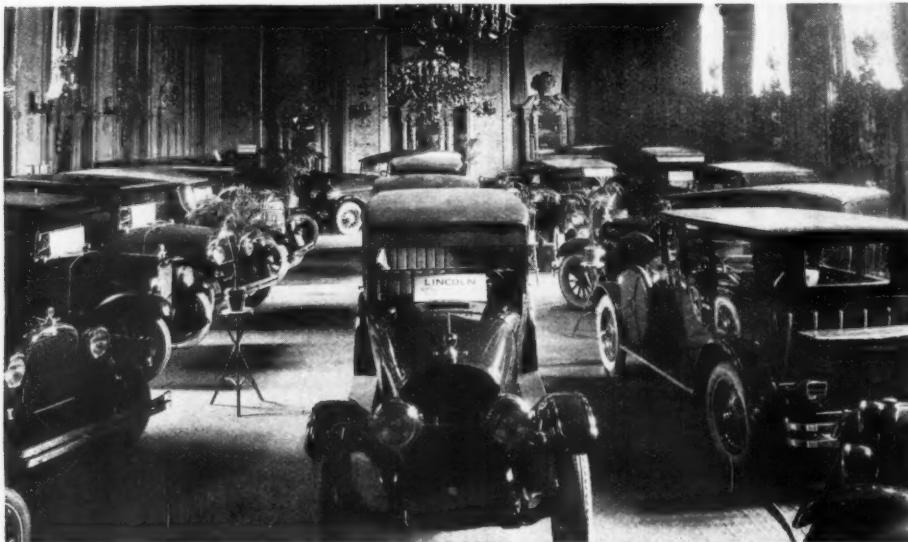
While the show held a very pronounced strain of prosperity for all, there was a note of not-far-distant-winter for a few of those which have made little or no effort to answer the demand for "something new."

Automobiles, if the buyer is to be considered as any factor, are things which must change—perfection in design has not been reached, even remotely. This was best illustrated by the fact that people, upon approaching an exhibit, immediately asked "What is new on this car?"

But this does not mean that a mere change in design, no matter how great the cost to the factory, would make any difference to the buyer. The change had to have some real reason for being. The prospect immediately had to be shown how he was going to benefit. Four wheel brakes, for instance, were comparatively new but salesmen on more than one occasion found themselves "stumped" by some question from a seemingly harmless prospect.

Good, sound, reasonable changes in automobile manufacture will always be expected and rewarded by buyers, but those changes must be with reason. People no longer will "fall" for a ten-cent change simply because the industry spends a million dollars advertising it.

At the Wilmington Show



WILMINGTON, Del., Jan. 31.—With the most magnificent setting ever seen here at a similar event, the ninth annual Wilmington Automobile Show is being held this week in the Gold Ballroom and the DuBarry Room of the Hotel du Pont. The attendance, starting with the opening, on Monday, and continuing each day and night, has been the best in history, when the limited quarters are considered. On the opening night the attendance was

15 times as great as on the opening night of last year's show. And this has kept up.

According to the show managers, the crowds in attendance are nearly all prospects, while some are actual buyers. Some sales have been made and lines are out which indicate quite a number as a result of the show. The dealers feel gratified.

BATTERY MAKERS TO MEET

CHICAGO, Jan. 31.—As a result of a preliminary meeting of four representative battery manufacturers in Chicago Jan. 29, it was decided to call a general meeting of all responsible storage battery manufacturers on Friday, March 21, 11 A. M., at the Congress Hotel, Chicago, for the purpose of organizing a Battery Manufacturers' Association. The meeting will be largely informal, no by-laws having been adopted. The object of the organization will be to promote a better understanding among battery manufacturers and to endeavor to educate the car owner public on the care of batteries.

Invitations to the meeting will be sent out to battery manufacturers in a short time by the preliminary organization committee, consisting of D. H. Kelly of the United States Light & Heat Corp., Niagara Falls, N. Y., R. B. Crane of Cooper Corp., Cincinnati, Chas. A. Englert of Englert Mfg. Co., Pittsburgh, and A. R. Campbell of Wright Battery Co., Flint Mich.

Mr. Kelly, chairman of this committee, and Mr. Crane will make arrangements for organization meeting in March.

BOOSTERS DINE

CHICAGO, Feb. 2.—The Boosters Club of Chicago, one of the chapters of the national organization of automotive equipment manufacturers' sales representatives known as the Automotive Boosters, International, dined at the Illinois Athletic Club during show week.

About 50 men, all members, were present. R. M. Sheridan, president and organizer of the club, acted as toastmaster. The Boosters were guests at the dinner of Kenneth Cloud.

STEWART-WARNER BUYS JONES

CHICAGO, Jan. 31.—The Stewart-Warner Speedometer Corp. has acquired control of the Jones Speedometer Co., a subsidiary of the H. W. Johns-Manville Co., of New York, subject to verification. This deal has been pending for some little time, but confirmation of the reports was not had until today.

The purchase price is not given and it is understood that it is the intention of the Stewart-Warner company to continue the manufacture of the Jones speedometer as long as there is a demand for it. The Jones company is located at new Rochelle, New York, where it has two modern plants erected during the war. It has operated as a subsidiary of the H. W. Johns-Manville Co. for several years.

BRANSTETTER RE-ELECTED

CHICAGO, Jan. 30.—Harry P. Branstetter of Chicago was re-elected president of the Old Timers Club at the annual banquet of the organization at the Congress hotel, Jan. 29 and all other officers also were retained. The banquet was as usual a get-together of veterans of the industry who take advantage of this occasion to renew old acquaintances and enjoy a good cabaret.

Hupmobile Dealers Told of Strides Made by Company

Feature of Program Is Film Showing Manufacture of Cars

CHICAGO, Jan. 31—More than 200 Hupmobile dealers were guests of the factory management at a dinner last night at the Congress hotel at which O. C. Hutchinson, general sales manager, stated the company's purpose to build 50,000 Hupmobiles in 1924. The production for 1923 was a little more than 38,000, Mr. Hutchinson said. He declared the management was convinced there was a market for all the cars the company would be able to build this year. He agreed with some other leaders in the industry in the opinion that competition will be keener this year than ever before.

C. D. Hastings, president of the company, made a brief address, complimenting the dealer and distributor organization on their good sales record in 1924. A point brought out was that in 12 years of constantly expanding production, the company has not increased the number of its distributors. It now has 74 distributors as against 75 a dozen years ago. The object of this policy, the officials stated, was to give the organization full opportunity for profitable business.

A feature of the program was a motion picture, "The Reason," showing the processes of manufacturing Hupmobile cars.

BLOOMINGTON ELECTS

BLOOMINGTON, Ill., Jan. 31.—At the annual meeting of the Bloomington Automotive Trade Association, new officers were elected for the coming year as follows: President, Jesse Simpson; vice-president, F. H. Cole; secretary, E. E. Pierson; treasurer, Ernest Martens. The resignation of H. Dale Rue as president was received with regret. Business connections with the Ford agency in Chicago, which will likely keep him in the metropolis a large proportion of the year, forced him to retire from active leadership in the dealers association.

In his years incumbency, Mr. Rue has proven to be a live wire, and the organization has profited by his able and energetic leadership. At the annual meeting, it was voted to stage the annual show of motor cars in the Coliseum and the dates were fixed for March 5, 6, 7 and 8. The quadrennial show of the electrical dealers of Bloomington is to be held at the same building the preceding week.

The latter are arranging some splendid and unique electrical displays and decorations and agreed to leave them in position during the week of the motor car show upon payment of one-fourth of the cost of installation. It was voted to retain membership in the Illinois Automotive Trade Association, providing a rate of \$10 per capita was allowed, the money for the total membership to be forwarded in a lump sum.

Paige and Jewett Dealers are Told of Hard Fight in 1924

Over 400 Hear H. M. Jewett Detail Factory Plans and Prospects for 1924

CHICAGO, Jan. 31.—The annual banquet of the Paige-Detroit Motor Car Co., for dealers attending the Chicago Show, was held last night at the Blackstone Hotel. President H. M. Jewett talked on the factory organization and the prospects for 1924, after which the evening was given over to a cabaret entertainment. About 425 were present.

Mr. Jewett told the dealers that the company had been working for a year or more on a standard system of accounting, and that within the next year it hopes to have this system installed in every distributor and dealer organization throughout the country. Each distributor will have an auditor who will travel and advise with his dealers on installing and operating the system.

He also said, "1924 is going to be the biggest year the industry has ever had," but a year of keen competition when weak businesses will fall by the wayside just as they have in 1923. In meeting the prospect who comes to the salesroom with a used car to sell, it is a battle of intellect and the question is simply whether the owner of the used car is a better salesman than the dealer.

In reply to the rumor that the company is about through with the Paige car and will confine itself to the Jewett, Mr. Jewett stated, "They made a poor guess, we have just begun."

More Than 200 Dealers at the Moon Chicago Banquet

CHICAGO, Jan. 31.—More than 200 dealers and their salesmen attended the second annual banquet tendered the Quinlan Motors Co. by the Moon Motor Car Co., of St. Louis at the Chicago Athletic Association. The Quinlan company, which includes twenty-four local Moon dealers, who are organized as the Dealers' Sales Corp., sold 1500 Moons last year and have contracted for 5000 this year.

The dinner was marked by the attendance of Colonel Fred Glover, president of the Timken-Detroit Axle Co., R. W. Judson, president and W. R. Angel, vice-president of the Continental Motors Corp.; J. Henry Smith, sales manager of the Pullman Co., which is building the Moon bodies; D. O. Scott of the Lockheed Hydraulic Brake Co. and A. R. Kroh of the educational department of the Good-year Tire & Rubber Co.

Mr. Kroh was the main speaker of the evening, his subject being "Organization." With his customary energy and enthusiasm, Mr. Kroh gave the Moon dealers a talk on salesmanship that aroused them to the needs of the hour and made them see the possibilities of a

record breaking year selling the product developed by Stewart McDonald, president of the Moon company who in the past five years has increased the volume of Moon sales from \$2,893,000 to over \$13,000,000 in 1923.

The winner of the Quinlan company's salesmen contest for the greatest volume of sales was Fred G. Pausch, who led his nearest competitor, W. A. Gilman, by more than 100 points.

Farmers Plan Fire Protection by Automobile and Highways

BLOOMINGTON, Ill., Jan. 31.—With the increase in the concrete pavement mileage on the rural highways of Illinois at the rate of 1,000 miles per annum, farmers who reside along such arteries of travel are discussing plans for fire protection which will prove effective and without excessive cost. It has been suggested that groups of farmers purchase a motor fire truck of high speed and store it at some central point, which can respond to alarms and check conflagrations in their incipiency.

At the present time, when a fire breaks out in the house or barn of the average farm, the chances of saving the structure are remote. The efforts, as a rule, are restricted to getting out the stock or furnishings and saving the adjacent structures.

The apparatus which is proposed for rural use will carry a powerful pump and chemical tanks of large size, one to be filled at the scene of the fire, while the other is being emptied. The pump can be utilized in drawing water from the available wells or cisterns.

FOX ORDERED SOLD

PHILADELPHIA, Jan. 31.—On petition of the receivers, Charles S. Rockey and C. K. Olberg, Judge Dickinson in United States District Court has issued an order for the sale of the Fox Motor Car Co., a Delaware corporation with plant in Philadelphia, at public sale, clear of all mortgages and encumbrances, except as specified in the deed of conveyance.

In their petition, the receivers state that it is impossible for the Fox Motor Car Co. to continue in business, or finance the purchase of materials in sufficient quantities to manufacture automobiles, by reason of its impaired credit through financial difficulties; that since the filing of the bill the automobile industry has improved; that it is impossible, despite the best of care to prevent the deterioration of parts and materials on hand and that it is costing approximately \$500 a week to maintain the plant in idleness, which charge could be saved if the property could be sold.

SERVICE MANAGERS MEET

MILWAUKEE, Wis., Feb. 1.—Briggs and Stratton service managers and distributors are meeting here today to discuss policies and to outline new service methods. About 60 are expected to attend the meeting.

A. P. Sloan, C. S. Mott and C. F. Kettering at Oldsmobile

"1924 to Be as Good, if Not Better Than 1923," Says President A. P. Sloan

CHICAGO, Jan. 31.—"I look for 1924 in the automotive industry to be fully as good as 1923, if not better," said A. P. Sloan, Jr., president of General Motors, addressing some 500 western distributors and dealers of Oldsmobile at the annual banquet tendered them here tonight at the Hotel LaSalle by the corporation. Mr. Sloan said that in his opinion the time was coming when the demand for automobiles would exceed the supply, and he assured the dealers and distributors present of the corporation's desire to handle their problems in a constructive manner and to co-operate in every way possible.

C. S. Mott, operating vice-president of General Motors, announced that preparations are under way to produce 1,000 Oldsmobiles a day. A. B. C. Hardy, president of the Olds Motor Works, referred to the policy of his company in furnishing consumers with parts at destination free of carrying charges, tax, etc., and predicted that, if properly utilized, this would have a powerful effect in bringing the public into dealer establishments.

C. F. Kettering, vice-president of General Motors in charge of research, said that the function of the research department was to "look down the road" and by scientific investigation and analysis determine the future trend of the industry in order to effect improvements in the motor car. A short talk also was made by W. V. Faunce, president of the Faunce Motor Car Co., Chicago Oldsmobile distributor. G. H. Peasley, general sales manager of Olds Motor Works, presided as toastmaster.

Oakland Dealers Hear Bank Executive at Annual Meet

CHICAGO, Jan. 31.—Walter Lichtenstein, executive secretary of the First National Bank of Chicago was the principal speaker at the annual meeting in the main banquet room of the Congress Hotel, of the Oakland dealers, Jan. 30. Mr. Lichtenstein read a paper revealing the facts which have made the automotive industry the greatest in the country today.

He predicted a prosperous year in 1924, not only for the automotive world but for all other lines as well. George H. Hannum, president of the Oakland company and C. J. Nephler, general sales manager, talked on the outlook for 1924.

A. P. Sloan, president of the General Motors Company, was also one of the speakers, as was M. S. Allen, of the General Motors Acceptance Co. and C. F. Kettering, chief engineer. L. J. Brookings, Chicago branch manager, made the closing remarks.

Stutz Dealers Hear Hyman at Chicago Luncheon Tell Plans

Schwab, Absent in Europe, Sends Message of Confidence to Chicago Show Attendants

CHICAGO, Jan. 31—An enthusiastic lot of dealers attended the luncheon of the Stutz Motor Car Co., at the Congress this afternoon, which was presided over by H. R. Ryan, general sales manager, who carried the voice of Charles M. Schwab, absent in Europe, to the men who retail his product. Mr. Hyman accomplished this by reading portions of the speech made at the New York luncheon of the Stutz company by Mr. Schwab in which he told of the confidence he has in the future of the Stutz company and how far he is prepared to go to make it one of the greatest institutions of the automobile industry.

Chief Engineer Charles S. Crawford painted a word picture of the new models, describing them in such detail that every man present went away with a clear comprehension of the many mechanical features.

Winding up the afternoon, W. R. Kroh of the educational department of the Goodyear Tire & Rubber Co., addressed the dealers on the financial strength of the Stutz company, the value of the Stutz franchise and the strong organization at the factory.

NEW MODELS AT WESTERN SHOW

SAN FRANCISCO, Calif., Jan. 31.—Many of the new models of passenger cars shown at the New York Automobile Show will be presented here for the first time in the West when the Pacific Automobile Show opens here February 16 to continue to February 23, inclusive. The appearance of these new models here is the result of visits to the eastern show and factories by a number of San Francisco dealers and distributors during the past three months. George Wahlgreen is manager of the show, as he has been successfully for several years.

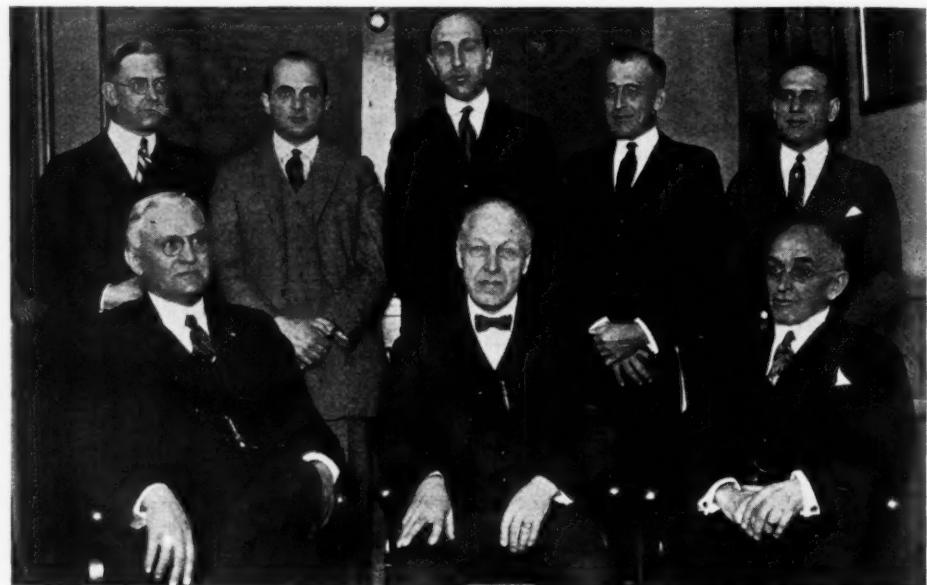
APPLEBY OFFICE IN ST. LOUIS

ST. LOUIS, Jan. 31—Percy Chamberlain Associates, Inc., promoters of the Appleby Used Car plan, announce the opening of a branch office at 1634 Arcade Building, St. Louis, under the management of G. H. Ford. This office will have charge of Appleby plan installation and service in Missouri, Illinois, Kentucky and Tennessee. The first city in Illinois to get under way with the Appleby plan is Danville, where operation of the Appleby Motomart was started Jan. 8. The home office of the Chamberlain Associates is in Detroit.

WINNERS HONORED

WASHINGTON, D. C., Jan. 31—In recognition of conspicuous service in highway safety education, a school teacher and two pupils were received recently by President Coolidge and presented with certificates of award pro-

After the Fight Was Won



General Manager Miles and his Chicago Show Staff: Top row—left to right, C. H. Halsey, C. J. Elias, W. G. Stirm, G. H. Hall, P. Goldsmith. Bottom row—L. L. Fest, S. A. Miles, T. E. Miles

vided by the Highway Education Board and the National Grange, P. of H. while in Washington as the guests of the National Automobile Chamber of Commerce, during the week of January 14 to 19.

The teacher is Miss Teresa M. Lenney, New Rochelle, N. Y. whose lesson on highway safety was chosen as the best of 60,000 submitted in a national contest, winning a prize of \$500. She was presented to the President by Senator Royal S. Copeland, of New York, and Representative Bertrand H. Snell of New York. The pupils are Miss Theodora Poole, Lansing, Mich., who was presented by John N. Willys, of Michigan and Miss Mildred Soper, Seneca Castle, N. Y. presented by Representative John Taber.

STEWART-WARNER REPORT

CHICAGO, Jan. 31—Preceding the issuing of its annual report, the Stewart-Warner Speedometer Corp. has issued a statement which gives the net profits of the year ending Dec. 31, 1923, as \$6,728,119, which is equal to \$14.16 a share on the 474,976 shares of no par value stock. In 1922 the net profits were \$5,335,162, equal to \$11.25 a share. Accompanying this statement, was the announcement that the directors have declared the regular quarterly dividend of \$2.50 a share, payable Feb. 15 to stockholders of record Jan. 31.

I.F. IN FRANCE

PARIS, Jan. 12 (By Mail).—Italian Isotta-Fraschini cars are to be assembled in France, a company for this purpose having been formed, with a capital of 500,000 francs, having at its head Lucien Rosengart, one of the leading stockholders in the Peugeot Company, who, until recently, was associated with Citroen.

Vesper Buick and Cowden to Hold Dealers' Meet at Show

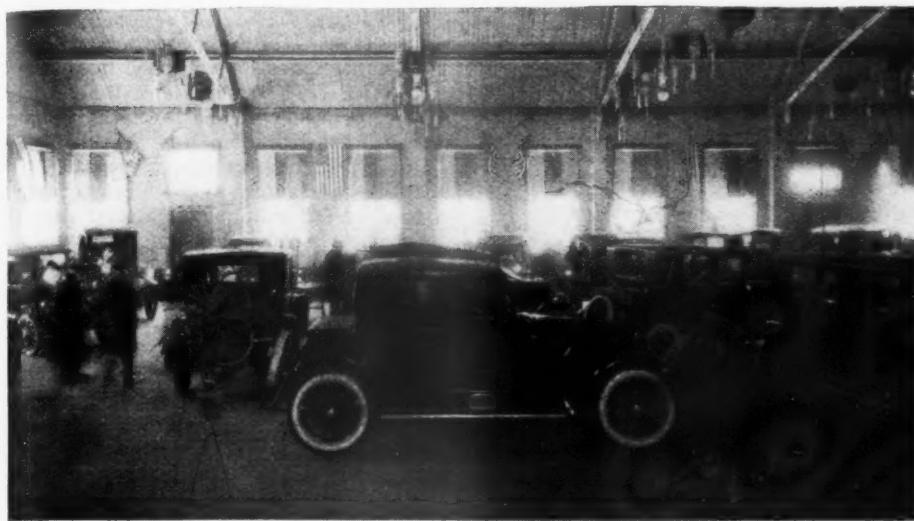
ST. LOUIS, Jan. 31—The Vesper Buick Auto Co. of St. Louis is arranging for a Southwestern Missouri Buick Dealers' meeting in conjunction with the Cowden Buick Co., of Springfield, to be held while the Springfield Automobile Show is in progress, from February 12th to 16th inclusive. The meeting will be held at noon on Thursday, Feb. 14th, and luncheon will be served. The place for holding the meeting has not been announced as yet.

W. H. Willcockson, secretary and director of sales for the Vesper Buick Company will attend the meeting, and will talk over with the dealers conditions in their territory, and outline to them the plans of the Buick Motor Co. and the Vesper Buick Co. for the remainder of the season, insofar as these plans relate to southwestern Missouri business. This special dealers' meeting and Mr. Willcockson's trip to Springfield, are being planned to follow out the personal contact meetings, which have grown out of the trip made through the southern portion of Missouri several months ago by Messrs. Walter H. Vesper, vice-president of the Vesper Buick Company, and H. P. Carter, district sales manager of the Buick Motor Co.

J. A. Charles, traveling representative for Vesper Buick in southern Missouri, will attend the meeting, and will also make a short talk on sales conditions as they relate to these dealers.

The new Buick Four Wheel Brake film, "Right on the Job" is being taken down to Springfield for this meeting, by John F. Dawson, advertising manager of the Vesper Buick Company, and this film will be shown at the dealers' meeting.

Kalamazoo Independent Dealers' Show



A. L. Viles Urges Better Handling of Products by Rubber Manufacturers at Rubber Meet

CHICAGO, Jan. 31.—Rubber manufacturers must cut their distribution costs if they expect to do business at a profit, declared A. L. Viles, vice-president and general manager of the Rubber Association of America, speaking at the fifth annual banquet of the Mid-West Rubber Manufacturers' Association held at the Morrison Hotel, Jan. 29. "You should have a proper appreciation of your obligation to the dealer," he said, "but don't make a baby of him. Eliminate unnecessary branches, which in many cases are established in a city simply because your competitor has one there. Handle your products through distributors and conduct your business along the proven economic lines that apply to other industries. You must know what it costs you to do business if you are to succeed. Unless you are willing to be guided by fundamentally sound business principles, you are not fit to be in business."

He urged that dealers be required to take on larger stocks, which would reduce the number of salesmen's calls, and expressed the belief that the industry would announce shortly an adjustment plan which will require the purchaser to present his claim within 90 days from the date of purchase. Raw materials have about reached the bottom with respect to costs, he said, and the industry must adjust its service costs to the public need.

"A great many vicious things have been said about the rubber industry," he protested, "but these have been inspired by baseless rumors. Get down to facts. No matter how sagacious a man is, he cannot accurately determine the trend of the industry without statistics. The Rubber Association of America has spent much money in the collection of trade data and in lending its financial support to the building of improved highways and

in the promotion of motor transport; and I want to say here that the Rubber Association of America stands ready at all times to cooperate with members of the industry in the dissemination of information, and to do everything it can to improve conditions; and this regardless of whether a manufacturer belongs to the Rubber Association of America or not."

Mr. Viles also spoke at the luncheon of the Mid-West Rubber Manufacturers' Association and discussed standardization of balloon tires. Members of his association have agreed on sizes for 20, 21 and 22-inch rims, and also have worked out a plan for oversizes on 23, 24 and 25-inch rims, which will be announced as soon as a divergence of opinion respecting clearances can be reconciled. One obstacle to standardization, he asserted, is the disposition on the part of certain car manufacturers to insist on odd sizes in order to be different from their competitors.

Balloon tires are still in the experimental stage, he declared, and there are obstacles to their universal adoption which will have to be overcome. It is expected that a table of standard inflation pressures will be presented for consideration at the meeting of the association to be held in New York February 6.

At its annual meeting the Mid-West Rubber Manufacturers' Association re-elected Thomas Fallon of the Lyon Tire & Rubber Co., Lafayette, Ind., as president. Other officers elected were as follows: J. B. Gabeline, Standard Four Tire Co., Keokuk, Ia., first vice-president; O. H. Blekre, Blekre Tire & Rubber Co., St. Paul, Minn., second vice-president; L. E. Sexton, Inland Rubber Co., Chicago, treasurer; C. S. Sutherland, Chicago, secretary and general manager.

Studebaker Labor Best Paid in State of Indiana, Claim

Dealers at Banquet Are Told of Remarkable Progress Made by Their Company

CHICAGO, Feb. 1—Putting profits back in to the business is reflected in the quality and price of this year's product of the Studebaker Corp., executives of that big organization told their dealers at the annual banquet at the Blackstone last night. Through spending \$37,000,000 of the profits in the last five years in buying modern machinery, expanding the plants and reducing the labor turnover, the company has been able in the past year to reduce the men-hours-per car-produced from 329 hours in 1922 to 184 in 1923.

Claim is made, too, that Studebaker employes are best paid of any in Indiana and the figures show that the average wages per man have been advanced 124 per cent in the last five years, with the average pay in 1923 of \$1,728, common labor averaging \$1,100.

The executives stressed the advantages of the new \$10,000,000 closed body plant and a significant statement was made that within a short time Studebaker expects to announce a new differential which will bring the selling price of closed and open models much closer together than they have been in the past, a statement which produced a cheer from the dealers. The South Bend body plant has a capacity of 300 closed bodies a day and it takes 21 days for a job to go through in which time it is given 18 coats of paint. Twenty-seven hundred bodies are in process at one time in this big plant.

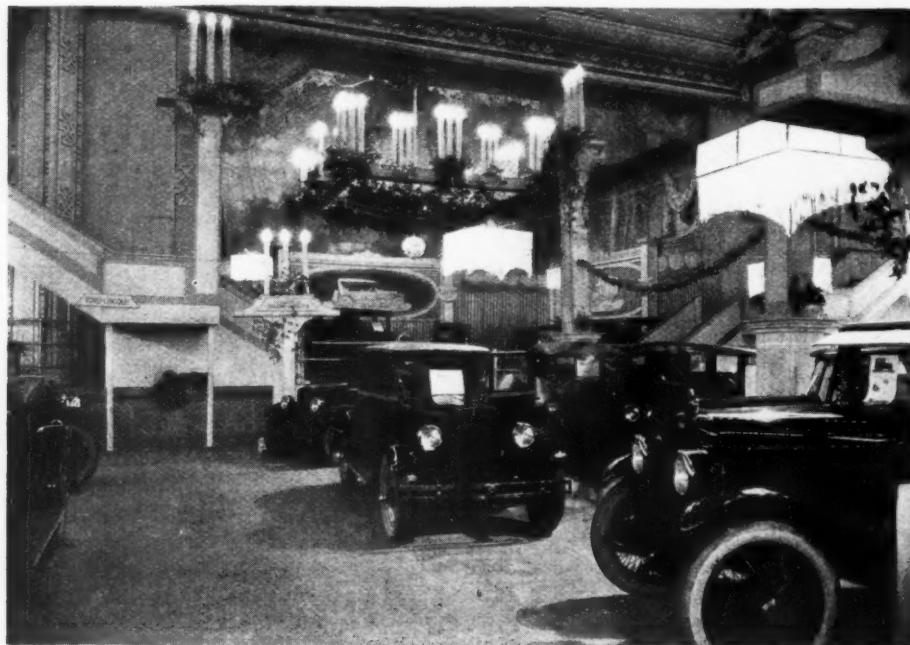
The toastmaster of the dinner was Vice-President H. A. Biggs and the speakers included President A. R. Erskine, Sales Manager H. S. Vance, President A. D. Lasker of the Lord & Thomas Advertising Agency, and Dr. Lippincott, of the production department.

FRANKLIN STATEMENT

SYRACUSE, N. Y., Jan. 31—The annual meeting of the H. H. Franklin Manufacturing Co. resulted in the re-election of H. H. Franklin as president, John Wilkinson as vice-president and F. A. Barton as secretary and treasurer. The annual report shows 1923 to have been the second best year in the company's history, with net earnings of \$1,140,000. The balance available for common dividends amounted to \$675,000, equal to \$2.25 a share on the 300,000 shares of common outstanding, but the directors voted against payment of common dividends at this time, although declaring the regular quarterly dividend of \$1.75 a share on the preferred, payable Feb. 1 to holders of record Jan. 20.

Production plans for 1924 call for 14,000 cars, approximately an increase of 20 per cent over last year.

Milwaukee Show Is Great Success



MILWAUKEE, Wis., Jan. 31.—A paid attendance 15 per cent in excess of the largest ever recorded, and a floor sales volume estimated at 20 per cent greater than at any previous exposition, distinguished Milwaukee's sixteenth annual winter show, held in the Municipal Auditorium, Jan. 19-26, and set it apart as by far the greatest commercial and artistic success the Milwaukee Automotive Dealers' Association has achieved so far.

With 125,000 sq. ft. crammed with passenger cars, motor trucks, equipment of all descriptions, and booths of allied interests, it was with the greatest difficulty that the record-breaking attendance could be accommodated, and, and for the first time in the history of the Milwaukee show, it became necessary at one time to close the doors of the Auditorium until relief from the jam indoors was effected.

The large increase in retail sales actually made on the floor, together with the enormous attendance were significant of the things that lead Milwaukee distributors and dealers to believe 1924 will bring an excess of business over 1923, which by all odds was the best year they ever experienced. The overwhelming attendance presented a vision of "saturation"—of interest.

In the face of the most vagarious season of weather that a Milwaukee winter show has yet encountered, the number admitted each day showed a decided increase over the corresponding day of the 1923 show. The total for 1924 being 94,156 as against 81,989 in 1923.

The accompanying view reveals the wondrously beautiful setting provided for the 1924 show. It was produced entirely by artisans of the M. A. D. A., in a large workshop and warehouse built during the past five months by the association to cover its needs in fabricating and handling the decorative schemes of

the annual winter show and the annual fall show, held in conjunction with the Wisconsin State Fair, late in August and early in September each year. The 1924 decorative scheme is aptly called "The House of the Thousand Candles."

The picture shows only the Main Arena of the Auditorium. Passenger car exhibits also filled Kilbourn, Walker and Juneau Halls, on the same floor, and Machinery Hall, in the basement below the Arena, and exceeding it somewhat in area. Equipment displays filled the long row of spaces in the horseshoe-like corridor around the outside of the Arena. Every inch of space in the big convention building was occupied with an exhibit.

Owing to weather conditions, which delayed lake traffic between Detroit and Muskegon, Mich., and Milwaukee, the vessel carrying five new Chrysler models did not reach the city until Friday. There is a firm rule that no exhibit material may be placed after the show formally opens, and none taken out before the show closes. Consequently the E. W. Clark Motor Co., distributor of the Chrysler with the Maxwell and Chalmers, had to be content with making a private showing in its salesroom, with but two days for show visitors to take advantage of this opportunity.

Congestion in the aisles of the show was impenetrable and it was due mainly to the interest of visitors in new features. Especially the explanations made periodically of four-wheel brake layouts caused a rush to the exhibit which completely blocked aisles for as long as 15 minutes. Exhibitors said the crowds this year were "motor-wise" to a degree never before imaginable. Salesmen and other exhibit attendants were put to a severe test in answering the multitude of questions, even from women, of a highly technical nature.

It is interesting to note that dealer interest as evidenced by the patronage given daily newspapers in advertising space in the special show editions broke all records. The Milwaukee Journal claims the record for the largest automotive section ever published in Milwaukee, with 73,082 lines, more than thirty pages, or 240 columns. Another paper carried 188 columns and a third, 134 columns, so that in the aggregate, Milwaukee distributors and dealers occupied a total of 562 columns, or a total lineage of nearly 170,000, a record for all time.

During the show the use of newspaper space by dealers and distributors likewise exceeded every past record in total lineage.

The Achen Motor Car Co., Chandler and Cleveland distributor, made one of the main "flashes" in show-time advertising with its blazing announcement that a solid trainload of thirty-five freight cars filled with Chandler and Cleveland sixes left the factory Jan. 19 for Milwaukee, forming the largest purchase ever placed at any season by this distributor. It was explained that the reason is an unusually early demand and definite prospects of a very heavy early spring trade. It is uncommon that a distributor in a climatic zone such as Milwaukee occupies should order more cars in the middle of the most severe part of the winter than ever before.

Naturally it is not difficult to find great enthusiasm among show exhibitors before and during the show, but the degree of satisfaction manifested since the show closed is remarkable and testified to the splendid results gained by the trade and the revelation produced by the show with respect to the public interest, all of which makes even the conservatives express the belief that the peak of demand is still in the future, despite the tremendous figures reached in 1923 selling in this market.

REFUSES DORRIS RECEIVERSHIP

ST. LOUIS, Mo., Jan. 31—Circuit Judge Frey denied the application for a receivership for the Dorris Motor Car Co. asked for by Webster Colburn and E. J. Scott on the ground that it appeared unfair to appoint a receiver for a solvent company. The suit was directed against Frank C. Thompson, H. B. Krenning and Parker H. Woods.

The petition charged that Krenning and other defendants attempted to dissolve the company with advantage to themselves and to the detriment of the common stockholders.

SEATS FOR INDIANAPOLIS

INDIANAPOLIS, Ind., Jan. 31.—The first sign of spring—even before the appearance of a red breasted Robin in a mild winter—is the opening of the seat sale for the International 500-mile automobile race which will be held at the Indianapolis Motor Speedway, as usual, May 30. The seat sale opens January 28, the earliest date the pasteboards for the great automobile racing event ever have been passed over the counter.

Many Makers at Capacity Schedules

Swing Into February at Rate Which Will Far Exceed 1923

Quicker Gait, With Idea of Overcoming Car Shortage, Ushers in 1924

NEW YORK, Feb. 4.—A large number of the major automobile producers are operating on capacity schedules. Other makers are maintaining high manufacturing schedules, these to be increased gradually so that by the end of February the entire industry will probably be working along the same level as featured the best months of last year.

The industry has swung into February, after an exceptionally good production month, with every promise that the output mark for the same month a year ago will be exceeded by as large a figure as marked the January increase over last year. It is estimated that January output approximated 100,000 more cars and trucks than were built in that month of 1923.

Last year the first quarter showed the smallest aggregate output of the four with a total of 875,503 of which 77,141 were trucks. The best quarter was the second with 1,155,490, of this number 122,879 being trucks. There was a tapering off in the third quarter to 1,000,744 with trucks dropping to 90,130 and a further decline in the last quarter when the output for the three months was 981,319, of which trucks number 86,107.

The industry has started the present year at a quicker gait with the idea of overcoming the possibility of a shortage of cars in the spring and is either warehousing its surplus product or shipping it to dealers to be stored against spring demand. Some storing of this character was done in December but the movement did not start in earnest until last month. Last year there was a serious shortage during the spring season owing to the fact that few cars were in storage and manufacturers were not able to cope with the current demand.

The sales outlook is distinctly encouraging, business in some sections being reported above normal. The open winter has had a marked effect on sales and has kept demand up to a high point during a generally slow period. Shows are attracting exceptionally large crowds and this is one of the factors that lead manufacturers to plan high production schedules for the first quarter, at least, and extending well into the second.

Increased operations are apparent in the truck branch of the industry where builders are actively engaged in meeting the demand for trucks and filling the needs of bus operators. Some stimulus has been given to truck manufacture through the fact that another railroad has seen the feasibility of using this

means of conveyance for short hauls in lieu of freight train service.

The generally good conditions with both car and truck builders are being reflected in parts centers where activities are progressing at a high point.

Attendance at Brooklyn Show Runs Far Ahead of Last Year

BROOKLYN, Jan. 31.—Advancing the Brooklyn automobile show to the second week following the National Exhibition in New York has accomplished the desired result. Attendance figures each night are running far ahead of previous years when the show was held in late February and early March. Afternoon attendances have been greatly stimulated by a Fashion Show which was staged daily at 3 o'clock, continuing for half an hour.

As in former years the Brooklyn show takes its place among the most beautiful as well as the strongest retail selling shows of the season. The armory in which it is held is large enough to accommodate a representative showing of the cars sold in Brooklyn and lends itself to pleasing decorations. Serving as it does as the "lid lifter" for the Spring selling season on Long Island, both wholesale and retail.

MOTOMART SELLS CARS

DETROIT, Jan. 31—In the first five weeks of its operation the Lansing Appleby motomart has sold more used cars than all the dealers combined, reports Percy Chamberlain Associates, emphasizing that people will buy the right kind of used cars at the right price even in winter months. From Jan. 1 to 12 the mart sold 30 cars for a total of \$17,550, and in the seven weeks that it has been in operation 82 cars have been sold for a total of \$41,530.

Two more southern cities, Tampa, Fla., and Knoxville, Tenn., have signed for Appleby marts.

REORGANIZE ASSOCIATION

PORTLAND, Ore., Jan. 31—Reorganization of the board of directors of the Oregon State Motor Association, the Oregon body affiliated with the American Automobile Association, was accomplished at the annual meeting of the association on January 16, for the purpose of making the body more representative of the state as a whole than it has ever been.

CANNOT USE BOSCH NAME

CHICAGO, Jan. 31.—Permanent injunctions have been issued to the American Bosch Magneto Corp. by the United States District Court, Northern District of Illinois, and the Illinois State Court, restraining M. K. Schachter and Isidor Schachter, operating in Chicago under the name of "Bosch Ignition Corp.", from using the name of "Bosch."

1000 Cars a Day During the Present Month, Willys Aim

Head of Willys Knight and Overland Companies Talks to Dealers at Meeting

CHICAGO, Jan. 31—Talking to more than 1,000 of his dealers at the company's show dinner at the Congress last night, John N. Willys declared that the Willys-Overland plants will turn out 1,000 cars a day during the month of February. This big production is brought about by the belief of Mr. Willys, strongly expressed to his retailers, that there will be a car shortage this spring. Believing as he does, Mr. Willys is going to keep the plants running to capacity and he is expecting to manufacture in the first six months from 165,000 to 175,000 of the scheduled 300,000 production for the full year of 1924.

Mr. Willys told of plant expansion, particularly at Pontiac, where he has spent a million and a half on his Knight engine plant there, which now has a capacity of 500 engines a day. With improved facilities, it is going to be far easier to meet the increased demand, and as a case in point he told of January, 1923, when he produced 10,000 cars with a force of 7,500 men, whereas this January he turned out 21,000 with 10,000 employees, thus doubling his production with only a 33 1-3 per cent increase in labor.

With 1,000 more dealers now than he had a year ago, Mr. Willys feels that this will be a big Overland year. He declares that he will meet all price competition and he advised dealers to stock now in anticipation of the spring business.

A feature of the dinner was the introduction of the western additions to the One Hundred Thousand Dollar Club, made up of salesmen who sell at least \$100,000 worth of Overlands and Willys-Knights in one year. Those qualifying included Messrs. Gordon, Witt, Watts, Ekeburg, Goetzen and Cutter of Chicago; Phillips and Clauss of Cincinnati, Phillips of Toledo, Bayha of Wheeling, Hutchinson and Marcilette of Huntington, W. Va., Knopp of Cleveland, Baer of Los Angeles, Miller of Evansville, Ind., and Wood of Mobile. In addition the winners of prizes in the recent Harvest Sweepstakes were introduced to their fellow dealers.

TIRE EXPORTS DROP

WASHINGTON, Jan. 31.—Exports of American tires in 1923 dropped to \$15,290,738 as compared with \$16,604,459 in 1922, according to figures of the Department of Commerce. This compares with peak exports of \$43,899,502 reported for 1920 and \$28,924,659 in 1919.

Revised Census Figures Give 1923 Production as 4,012,866 Vehicles

WASHINGTON, Feb. 1.—Revised figures of the United States Census Bureau, Department of Commerce, place the 1923 production of automotive equipment at 4,012,866 vehicles, compared with 2,586,049 in 1922, representing an increase of 1,426,817 during the year. The figures are based on reports from 186 manufacturers, 96 making passenger cars and 119 making trucks (29 making both passenger cars and trucks). The figures also include fire apparatus and motor street sweepers and include production figures, during the earlier months of 1923, of 12 manufacturers, now out of business.

The 1923 passenger car production is given, according to the revised December production figures, as being 3,636,599 cars, as against 2,339,768 in 1922, while the truck output (including fire apparatus and street sweepers) totaled 376,257 in 1923, as against 246,281 in 1922. The final figures as announced also include slight revisions in the November passenger car and truck production.

Following is the census bureau's tabulation of the 1923 production, with comparisons for 1922 and comparisons for the last six months of 1921:

	AUTOMOBILE PRODUCTION (Number of Machines)					
	Passenger Cars			Trucks		
	1921	1922	1923	1921	1922	1923
January	.....	81,696	223,819	.....	9,576	19,720
February	.....	109,171	254,773	.....	13,350	22,161
March	.....	152,962	319,770	.....	20,022	35,260
April	.....	197,224	344,639	.....	22,640	38,056
May	.....	232,462	350,410	.....	24,097	43,678
June	.....	263,053	337,362	.....	26,298	41,145
July	165,616	225,086	297,330	11,136	22,046	30,663
August	167,756	249,492	314,373	13,400	24,692	30,829
September	144,670	187,694	298,911	13,978	19,462	28,638
October	134,774	217,566	335,023	13,149	21,795	30,166
November	106,081	215,352	*284,921	10,487	21,949	*28,066
December	70,727	208,010	275,268	8,656	20,354	27,875

*Revised.

7,000 Franklin Cars Is Aim in First Half of This Year

SYRACUSE, Jan. 31.—The production schedule of Franklin cars for the first half of 1924 calls for 7,000 cars. Production is now on a basis of 56 cars a week.

At the annual meeting of the H. H. Franklin Co. a report was made showing earnings of approximately \$2.25 per share on 300,000 of no par common stock. Net earnings of the company amounted to \$1,140,000 during 1923 after all charges and tax had been deducted. Deducting the preferred stock dividend of \$465,000 a total of \$675,000 is left for common stock. The regular dividend of \$1.75 per share on Franklin preferred will be paid February 1 to stockholders of record January 20.

H. H. Franklin was re-elected president of the H. H. Franklin Co. and the Franklin Automobile Co.

OWNERS SELL CARS

NEW YORK, Jan. 31—A unique contest to promote sales through the cooperation of owners has just ended. The contest was promoted by the Hunt Motor Car Co., metropolitan distributor of the Rickenbacker which offered a Rickenbacker sedan as a prize to go to the Rickenbacker owner who would submit the largest list of prospects that resulted in actual sales.

More than 50 per cent of the Rickenbacker owners in this district competed,

the winner being Joseph E. Green, whose tips resulted in the sale of two sedans and two coupes. Green scored a total of 80 points, 23 points being for the sale of a sedan and 17 for a coupe.

TO REPORT RUBBER SITUATION

WASHINGTON, Jan. 31—Result of its investigations of crude rubber sources, covering fifteen nations, for which Congress appropriated \$150,000, by which it is hoped to disclose how the United States automobile industry and other rubber using trades, may be made independent of British rubber producers will be made public in the next few weeks, the Department of Commerce, in charge of the investigation, has announced. Preliminary reports from the rubber experts indicate that it will be possible to grow rubber in certain South American countries and the Philippine Islands.

FISK STATEMENT

NEW YORK, Jan. 31.—The annual meeting of the Fisk Rubber Co. re-elected the old directors who, at a subsequent meeting, re-elected the officers. The company's report for the ten months ended Oct. 1, 1923, shows net sales of \$44,862,743 and operating profits of \$3,810,881, after all expenses and depreciation reserves. After payment of interest and other charges there was reported a balance of \$2,583,613.

Automotive Manufacturers Hear Asch and Heminway

Excise Taxes; Mergers and Simplification Are Discussed at Meeting

CHICAGO, Feb. 2—Members and guests of the Automotive Manufacturers' Association at a dinner last night, one of the events of a busy automobile show week, heard M. L. Heminway, general manager of the Motor Accessory Manufacturers' Association, discuss business conditions, mergers, excise taxes and simplification. They also heard Ben Asch, president of Ash & Co., New York, tell how to get the jobber to sell more.

Following Heminway's address the association unanimously adopted a resolution petitioning Congress to repeal the excise tax on automotive replacement parts. This resolution had previously been drafted by the association's tax committee.

Heminway stated that automobile manufacturers are not placing long time commitments with the parts makers. Indications were, he said, that they are providing for their needs for the first six months of the year and awaiting further developments before determining the course to follow in the latter part of the year.

Speaking of opportunities for the accessory manufacturer he declared there is an ever increasing market for replacements and repairs. He suggested diversification of products as a measure to assure continued profitable operation. He told of one rubber manufacturer who recently developed a rubber moulding and beading for the interior of closed cars.

Mr. Asch declared that it would be possible to sell twice as many accessories as are now being sold to the same number of car owners. The important thing, he said, is to make the salesman live up to the meaning of the word. He advocated systematic training of jobbers' salesmen, the carrying of samples by salesmen and the use of individual rather than standardized catalogs by jobbers.

STOUT ELECTS DIRECTORS

DETROIT, Jan. 31.—Directors of the Stout Metal Airplane Co. were elected at the annual meeting this week. They are Sidney D. Waldon, chairman; R. A. Stranahan, George Holley, Edsel Ford, Charles P. Bohn, A. T. Waterfall, William B. Mayo, Harold H. Emmons, Fred Warner, W. O. Briggs, Charles T. Bush, Fred Fisher, C. F. Kettering, Harry R. Graham and William B. Stout. The meeting was held at the Aviation Town Club. Major achievements of the company during the year past are the success of the air sedan which has flown 3,000 miles and given 311 Detroiters tests, and the development of the all-metal air-Pullman, carrying ten passengers which will be completed within 60 days.

Brazil City, Ind., Adopts Flat Rate on Battery Work

Eight Shop Owners Agree to Charge Uniform Price for Many Service Operations

BRAZIL CITY, Ind., Jan. 31.—Standardized prices to take effect Jan. 1, 1924, have been agreed upon by the following concerns in the vicinity of Brazil City, Ind.: The Brazil Exide Battery Co., Carbon Garage, Ed Tyrrell Garage, Hicks Battery Station, Klingler Englehart Co., MacDonald Bros., National Garage, U. J. Wilding Garage.

The prices are as follows:

Re-insulating 6 volt battery having either 11 thick plates or 13 thin plates	\$ 8.00
Re-insulating 12 volt battery having either 7 thick plates or 9 thin plates	11.00
Jar replacement. List price of jar, plus	1.00
Cover replacement, list price of cover, plus	.50
Re-sealing, any size	.50
Case or box replacement, includes re-sealing, list price of case, plus	.75
Reforming	.50
Changing or replacing terminals. List price of terminal (where used), plus	.25
Removing and installing battery	.50
Storage, wet, per month	.50
Storage, dry, same as re-insulating. Cable terminal replacement, on Fords, new cable put on	1.10
Other cars, list price of parts, plus time consumed.	

MILLER SALES GOOD

AKRON, O., Jan. 31—Miller Rubber Co., with additional production space provided for out of earnings established a new high mark in production during the year which has just closed but showed sales and net profits similar to those shown during 1922, according to semi-official reports now available.

Had prices of tires remained at the point from which they dropped after July the company would have made the greatest showing in its history, it is stated.

Sales are reported at approximately \$28,000,000 which compares with \$28,470,232 gross sales of 1922 and \$23,624,268 gross sales reported for 1921. Net profits are reported at \$2,500,000 which compares with \$2,439,358 reported for 1922 and a deficit of \$555,587 reported for 1921.

Orders booked thus far this year and season exceed those of any previous year it is reported.

PLAN AERONAUTICAL SHOW

AKRON, O. Jan. 31.—Plans are being rapidly completed for the first aeronautical show in America to be held in connection with the annual automobile show at the Central Garage February 16 to 23.

The Akron rubber companies, the Chamber of Commerce, the Akron chapter of the National Aeronautical Association of America and government aeronautical officials are co-operating to make the first show not only of interest locally but to make it a genuine exhibition of America's progress in matters aeronautical.

Appeal for Removal of Excise Tax on Automobiles Is Refused by House Ways and Means Committee

WASHINGTON, Jan. 31.—Efforts of the automobile industry to have repealed the excise taxes on its products, will go for naught insofar as the House Ways and Means Committee's favorable action is concerned. Politics, characterized by Congressman Robert H. Clancy of Michigan, author of the three repeal measures, "as petty" have engulfed the Committee like a cloak and as a result the measures sponsored by the Democrats are largely being thrown into the discard, for those favored by the Republicans.

Following many months of hearings, on both the automobile excise taxes and other industrial taxes, Republican members of the Committee, numbering 15, announced on Monday of this week there was little likelihood of an agreement and served notice on the Democratic members, numbering 11, that they would write the majority report, and the Democrats could write the minority report.

"The question of repeal of the automobile excise taxes, can be brought up on the floor of the House, and will be brought up on February 11, when the Committee makes its report to that body," Mr. Clancy declared in a statement made today on the prospects of the measure's adoption.

Formal motions, made by various Democratic members of the Ways and Means Committee, to repeal or reduce the excise taxes were made on Monday, but all of them were defeated.

Tentative agreements, adopted on motions, were passed by the Committee reducing various excise taxes to a total aggregate of \$103,254,488. An idea of the attitude taken by the committee, in refusing the repeal of the automobile excise taxes, holding that they were luxuries, may be gathered from a comparison of those favorably reported, on which the committee held were not luxuries.

As an example, the Committee held that bowling alleys and billiard tables were not luxuries and favorably reported a reduction of \$1,200,000 in the excise taxes of this industry; the theater admission tax was repealed altogether on tickets up to fifty cents, bought for prize fights, circuses, baseball, football and other forms of entertainment.

In round numbers the reductions are estimated as follows: On telephone and telegraph messages, \$30,380,000; on

BATTERY DEALERS BANQUET

ATLANTA, Ga., Jan. 31—A number of the larger battery organizations in Atlanta co-operated in a complimentary banquet and reception given last week at the Chamber of Commerce Hall, having as their guests practically every battery dealer in Atlanta. The purpose was to bring together all established dealers

beverages, \$10,131,000; on admissions, \$33,000,000; on theater seating taxes, \$7,112,000; on candy, \$11,315,000; on jewelery, \$10,000,000; on produce sales, \$3,507,000; billiards and bowling, \$1,200,000, the remainder being on knives, hunting garments, yachts and motor boats, carpets, rugs, trunks, purses, pocketbooks, and fans.

Of the total \$103,254,488, approximately \$57,530,000 reduction will be effected in the taxes on entertainment, candy, jewelry and sports, all of which have been classed as essentials, automobiles, trucks and accessories remaining on the classifications as luxuries.

The only favorable consideration given by the committee at all towards the motor industry was the exemption of motor buses used exclusively for transporting pupils to school from the tax on automobiles for hire.

"Notwithstanding the petty politics played in the Committee in turning down the plea of the automobile industry for a reduction in excise taxes, the chances are still good, I believe, for favorable action on the floor of the House and Senate," Congressman Clancy states, in outlining the chances for the adoption of some relief measures.

"If this is to be done, however, every one connected with the automobile industry should make known his attitude to his Congressman and Senator," Mr. Clancy declares. "I have been and still am very much of the belief that the automobile manufacturer is just as desirous of having these excise taxes removed, although he does not pay them, as the public is, but it will be extremely difficult to convince Congress of our desires unless full expression is given."

In this connection Mr. Clancy declared that one member of the House Ways and Means Committee, declared in his argument against the favorable report of the three measures, that he had never received a letter, telegram or personal message from any manufacturer of the automobile industry, or an automobile purchaser, either within or outside his district, asking for his support of the measure.

The Committee will make its report on February 11, to the House and two months, Clancy predicts, will be consumed in its consideration in the House and a month in the Senate.

that conditions in the battery industry might be discussed, and a spirit of good fellowship worked up among the various dealers and organizations in the battery field. It is the plan of the battery division of the Atlanta Automobile Association to stage regular meetings throughout the year devoted exclusively to this phase of the automobile business.

CONCERNING MEN YOU KNOW

H. B. Osgood, for the past four years general manager of the Giant Grip Mfg. Co., Oshkosh, Wis., manufacturing traction equipment for motor trucks and busses, hardware specialties, key calks, horse shoes, etc., has resigned, effective March 1. He has not completed future plans and his successor has not yet been selected. Mr. Osgood has recently completed his second term as president of the Oshkosh Association of Commerce.

Frank Nickolai, Green Bay, Wis., has been appointed by the International Harvester Co. to be manager of motor truck sales in the territory consisting of Brown, Door and Kewaunee counties, Wisconsin, with headquarters at the I. H. C. branch at 125 North Broadway, Green Bay.

J. B. Mansfield, formerly president and general manager of Mansfield Steel Corp., Detroit Trailer Co., has opened consulting engineering offices at 5005 Cass avenue, Detroit, specializing in sales, transportation, shop management and other features of industrial work.

I. E. Loveland, formerly service engineer of the Remy Electric Co., Anderson, Ind., has been named service manager of the company to succeed R. K. Evans. Mr. Evans has joined the staff of the General Motors Export Co. at New York City and later will be assigned to duties in its foreign field.

Fred W. Lycett of the Walter Upson Motor Car Co., Flint distributors, who has been in charge of the Worcester branch, has returned to Hartford to take over the wholesale department in the Connecticut territory.

H. L. Dunn has resigned as general purchasing agent of the National Motors Corp. During the last few months he has made his headquarters at the Jackson, Mich., plant. Mr. Dunn has not made any announcement of his future plans.

Lou A. Raasch has been appointed sales manager with headquarters at Worcester, Mass., of Walden-Worcester, Inc. Mr. Raasch has been manager of the company's office at San Francisco since 1919. The appointment involves no change in the present policy of distribution.

L. A. Laporte, president and secretary of the Dunbar-Laporte Co., Holyoke, Mass., will retire March 1 from the concern, in which he has been associated for eight years with Charles R. Dunbar.

L. Logie, who has had many years experience in the automobile business, has been appointed Canadian sales manager for the Rickenbacker and the Rollin cars. Mr. Logie will be located at Windsor, Ont.

Edward Hyer, Hartford, Conn., for several years associated with the Cadillac sales department of Brown, Thomson & Co., has taken over the Lincoln sales department of the Elmer Automobile Co.

A. L. Johnston, well known to the automotive trades as purchasing agent of The I. J. Cooper Rubber Co., Cincinnati, O., has been appointed general manager of the company and has already assumed his new responsibilities. G. M. Gunderson has been appointed purchasing agent to succeed Mr. Johnston. Mr. Gunderson has been associated with The I. J. Cooper Rubber Company as stock auditor.

avenue vacated by the R & V Knight branch.

Edward G. Acker, formerly New England distributor for the Noma, and more recently an agent for the Chevrolet, has closed up his business and accepted a position with Alvan T. Fuller as a salesman for Packards. Fred T. Lucas, former distributor for Mitchells, has also gone with the same company.

The Selden Truck Co. has opened a factory branch here. So have the Sterling and Sanford truck factories. And ground has been broken for a big structure to house the truck and bus business of the Pierce Arrow Company on Dummer Street to cost \$200,000.

AVERAGE USED CAR PRICE

ST. LOUIS, Jan. 31.—Selling prices for used cars in the last quarter of 1923 had a wide range from the average of \$202.16 in Iowa to \$778.06 in Ohio, according to figures compiled by the National Automobile Dealers Association. Wisconsin averaged \$273.86; Missouri, \$296.77; Oregon, 301.46; Mississippi and Louisiana, \$301.43; Pennsylvania, \$411.25; Illinois, \$289.05; Kentucky, \$273.86; New York, \$467.96; Minnesota, \$277.65; Michigan, \$372.46; Arkansas and Tennessee, \$266.93; Indiana, \$255.71, and California \$412.75.

COATS SALE FEB. 29

COLUMBUS, O., Feb. 1.—John G. Price, receiver for the Coats Steam Car Co., which has discontinued business at the Columbus plant, has been authorized by the bankruptcy court to again offer the property at public auction, Feb. 29 at 10 A. M. at the plant, located on South High St. The real estate is appraised at \$278,000 and the machinery at about \$20,000. At the first offering for sale the best bid was \$107,000 which the court refused to accept.

Michigan Trade Association Opposes Soldiers' Bonus

Declare Bonus Would Have Too Great Effect on Taxes; Staebler Is President

DETROIT, Feb. 1.—Walter P. Staebler of Ann Arbor was elected president of the Michigan Automotive Trade Association, succeeding W. K. Philp of Grand Rapids, at the annual meeting of the association held here this week. Guy A. Butler of Jackson was elected vice-president of the association, and H. H. Shuart and L. H. Saunders were re-elected secretary and treasurer, respectively.

Directors elected for a term of three years were Wilber Dunn, Jackson; Robert P. Bishop, Saginaw; Guy O. Simons, Detroit; Joseph Thompson, Ypsilanti; A. E. Hubbell, Bay City, and S. S. Cushman, Battle Creek. The directors, with the new officers, begin their terms of office Feb. 1.

Two resolutions were adopted, one that the granting of a bonus by the Federal government to ex-service men would be detrimental to business generally because of its effect upon taxes, and would be especially detrimental to the automotive industry in that it would make for a continuance of excise taxes. The second resolution proposed the correcting of the Michigan certificate of title law to show the series or model of car, rather than year made, which it is claimed is unfair to the buyer in the early part of the year.

Speakers at the annual session were A. R. Kroh, sales promotion department of Goodyear Tire & Rubber Co.; Paul Brophy, Percy Chamberlain Associates, Inc.; Hon. Charles J. DeLand, secretary of state, and Hon. George W. Welsh, speaker of the Michigan House of Representatives. Hon. Joseph A. Martin, acting mayor of Detroit, welcomed the delegates, and Hon. Charles H. Culver was toastmaster at the dinner.

TIRES ON PAYMENTS

ST. LOUIS, Mo., Feb. 2.—The Independent Tire Co. and the Auto Tire Sales Co., have instituted here the practice of selling tires on time payments. This is not the first time which this plan has been tried; another concern began it a year ago but discontinued it a short time later. Under the plan now operated by the two companies the title to the tire remains in the sellers' name until the tire has been fully paid for under a weekly rental arrangement.

CADILLAC'S BEST YEAR

DETROIT, Feb. 2.—Cadillac Motor Car Co. reports sales, shipments and deliveries of cars in 1923 as marking the highest point it has yet attained. With the reception that has been accorded the new Cadillac models in the first four months of their introduction, and with the generally prosperous condition in all sections of the country, business in 1924 is expected to set still higher marks.

CHANGES IN BOSTON

BOSTON, Jan. 31.—Changes continue to take place in Boston. The Reed Motor Car Co., that handled the Stephens Salient Six, has filed a petition for receivership. T. E. Reed, who formed the company, has accepted a position temporarily with the Burnett & Sherman Co., distributors of Ford and Lincoln. His partner, Robert Putnam, has made no connection, as yet.

T. A. Winsloe, who has been handling cars in Wollaston for 15 years, has taken the Boston agency for the Moon line and has opened quarters on Commonwealth

BUSINESS NOTES

At the annual meeting of the stockholders of The Norwalk Auto Parts Co., Norwalk, O., held Jan. 26, the following officers were re-elected: E. D. Shearman, president; S. H. Penfield, vice-president; R. J. Barrows, secretary, and A. E. Linendoll, treasurer and general manager.

Owing to the great demand for Johnson appliances, a New York office has been opened by the Johnson Gas Appliance Co., Cedar Rapids, Ia., to accommodate the trade in that territory.

Among the new automotive agencies established the past few weeks in the southeast are the following: Brundige Automobile Co., Brundige, Ala., \$10,000 capital; Bell Motor Co., Canton, N. C., \$50,000 capital; Hudgens Motor Co., Lenoir City, Tenn., \$15,000 capital; Consolidated Motor Co., Memphis, Tenn., \$40,000 capital; Motor Service Co., North Wilkesboro, N. C., \$100,000 capital; Easley Automobile Sales & Repair Co., Easley, Ala.; Mathews Auto Repair Co., Nashville, Tenn.

Duquette Bros., motor truckmen, have purchased the Cummings mill in Webster, Mass., and will remodel it for a general public garage.

A battery dealers' association has been instituted in Springfield, Mass., with Harry W. Stacy as organizer and temporary chairman. A working plan is being formulated and officers are to be chosen shortly. The projected membership includes 41 concerns in Springfield and suburban points.

Hood Rubber Products Co. has declared the regular quarterly dividend of \$1.75 on the preferred stock payable March 1 to stock of record Feb. 1.

General Motors Acceptance Corp. has increased its capital stock from \$6,000,000 to \$7,600,000.

A. O. Smith Corp. has declared the regular quarterly dividends of 25 cents a share on the common and \$1.75 a share on the preferred, both payable Feb. 15 to holders of record Feb. 1.

H. H. Franklin Manufacturing Co. has declared the regular quarterly dividend of 1 1/4 per cent on Franklin preferred stock payable Feb. 1 to stockholders of record Jan. 20.

The Eau Claire Auto Supply Co., Eau Claire, Wis., is engaged in the wholesale distribution of supplies and accessories.

The Fendagard Sales Corp. has been formed as general distributor of the "Fendagard," manufactured in Worcester. D. E. O'Neil heads the company with general offices in Springfield, Mass. Dealers are being appointed in many places throughout the country.

William Wiese, Inc., of 234 West 56th street, New York, manufacturers and importers of automobile fabrics, have announced the appointment of the Getsinger-Fox Co., Detroit, as their representative in the middle western states.

Broderick Motor Sales Co., Shelby, O., has been chartered with an authorized capital of \$25,000 to buy and sell automobiles. Incorporators are Mildred R. Trask, William F. Broderick, John N. Wilkin, F. M. Osborne, Jr., and Florence T. Osborne.

The Convertible Wagon Trailers, Inc., has purchased a building used for the manufacture of airplanes during the war in Buffalo, N. Y., where they will manufacture trailers used by motor trucks and automobiles. The concern is a new American branch of the Municipal Wagon Company, Ltd., of Toronto.

Equipment and machinery of the Gray Machine and Parts Corp. in Batavia, N. Y., is being moved to Buffalo, where the concern will establish its business. The firm, headed by Alexander Gray of Toronto, Ont., manufactures automobile parts and accessories.

The Sangimo Cadillac Co., Springfield, Ill., has been incorporated with \$50,000 stock to deal in cars at 422 South Fourth street. Incorporators are: Joseph E. Dearmin, \$27,200; Harvey S. Storts, \$22,300; George Mercer, \$500.

The Beaver Truck Corp., Limited, manufacturers of motor trucks, Hamilton, will move shortly to Brampton, Ont.

The American Auto Sales Co., Dallas, with a capital stock of \$12,000, has been incorporated. Among the incorporators are C. O. Laney, F. B. Horton and J. H. Hill.

The Vaughan Auto Supply Co., Houston, with a capital stock of \$10,000 has been incorporated. Among the incorporators are B. M. Vaughan, N. K. Robb and A. A. Sterling.

The Auto Equipment Co., San Antonio has been incorporated. The capital stock is \$6,000. The incorporators are M. C. Powers, F. J. Bowden and J. C. Bowden.

The Panyard Piston Ring Co. of Conn., has taken over the salesroom in the J. H. Hale Co. garage, 449 Wethersfield avenue formerly occupied by the Edward S. Clark Motor Co.

The Hartford, Conn. branch of the Firestone Tire and Rubber Co. has removed from 41 Allyn street, Hartford, to 375 Connecticut Boulevard, East Hartford.

Rueben T. Bassett, one of the founders of the Presto Distributing Co., Hartford, Conn., sales and service representatives of the Presto-O-lite storage battery has acquired the interests of his partner George A. Fisher and will continue the business as an individual.

The Neil Brothers Co., Canton, O., has been chartered with a capital stock of \$40,000 to do a general wholesale and retail automobile business. Incorporators are: William Neil, David Neil, J. B. Carnes, Jennie Thomas and William E. Piefer.

The McVey-Kircher Motor Co., Youngstown, O., has been chartered with an authorized capital of \$25,000 to do a general wholesale and retail automobile business. Incorporators are: Thomas McVey, F. C. Kirchner, H. L. Kirchner, Dr. C. Carlisle and H. G. Bye.

The Royal Palm Rubber Co., a new corporation formed recently at Kelsey City, Ill., has awarded contracts for the construction of a new plant to manufacture automobiles tires and tubes, according to an announcement made last week by G. F. Laughlin, of Kelsey City, president of the company. The tires to be produced will be made especially for Florida use.

The Murphy-Stevenson Co., Jackson, O., has been chartered with an authorized capital of \$15,000 to buy, sell and deal in autos, parts, accessories and tires and tubes as well as conducting a general automobile company and garage. Incorporators are: R. E. Stevenson, R. S. Cunningham, Edyie Grimm, Margaret Skinner and Edith L. Thompson.

H. B. Coen, who has been operating a Ford agency at Sixth avenue and High streets, Columbus, O., has opened an exclusive agency and service station for the Lincoln at 327 East Broad street. Both concerns while being separate organizations will be conducted under the name of the H. B. Coen Co.

Fritzjohn Manufacturing Co., Muskegon, Mich., builder of bus bodies, has purchased the plant of the Kelley Valve Co. east of Muskegon Heights, and after building an addition, will start manufacturing operations in the new location.

The Misveldt Brothers, Erie, Ill., have sold their motor car repair shop service station and accessory store, to George Scriver and J. E. Murray, both of Polo, Ill., and possession was given Feb. 1. The retiring firm will retain the distribution of the Overland and Willys-Knight cars but will seek a smaller building and conduct the agency only.

Rudisill Brothers, Monticello, Ill., have moved back into their garage and sales agency which was badly damaged by fire last November. The work of rebuilding has been completed.

Yates & Thornton, Petersburg, Ill., have been appointed distributors for the Nash car in the Menard, Cass and Mason counties territory.

The Economy Auto Sales Co. has been organized at Oak Park, Ill., with capital stock at \$75,000. A garage and sales agency has been opened at 208 West Roosevelt road. The company will distribute motor vehicles and accessories. The promoters include Frank Jicha and Clyde Ashley.

The E. V. Kirby Motor Car Co., has been organized at Urbana, Ill. Capital stock has been fixed at \$5,000. The promoters are E. V. Kirby and E. R. Hatcher. The Flatiron building has been leased and automobiles, trucks and tractors will be handled.

The Oakland-Columbus Co., 594 N. High st., Columbus, O., continues as an associate Oakland dealer and with the Cadillac Co., will make up two strong selling organizations located in different parts of the city.

The Ottoville Garage Co., Ottoville, O., has been chartered with an authorized capital of \$25,000 to sell automobiles, accessories and electrical supplies for autos. Incorporators are Joseph J. Miller, William Schneg, Anthony J. Weber, Leo F. Herman and Frank X. Weber.

The Miller Rubber Co., Columbus, O., has established headquarters and is now operating at 234 N. Third street. A noteworthy feat was accomplished by H. C. Elson, manager, of the local branch immediately after the destructive fire which ruined the entire stock. Before the fire had been extinguished, Mr. Elson had negotiations under way for a new location and had a complete stock of tires on order from Akron.

The Overland-Willys-Knight Motor Car Co., now located at 519 Fourteenth street, Moline, Ill., has let the contract for a modern sales agency and service station to replace the present structure.

Dealers Prepare to Combat Anti-Time Sales Propaganda

Merchants in Other Lines Alarmed at Increase in Sale of Automobiles

CHICAGO, Jan. 31.—Dealer organizations in several sections are preparing to take steps to combat the propaganda against the purchase of automobiles on time which has been instituted by associations of clothing dealers and others who have become alarmed because of the falling off in their own business and are attributing it to enormous sales of motor cars on installments. The contention of automotive interests is that if other manufacturers and dealers would give the public greater values than prevailed in pre-war days, as motor car makers have done, there would be an immediate sharp upturn in their sales volume.

Finance companies operating on a national basis, which are obtaining the bulk of the business, contend emphatically that there is nothing in the present situation which need cause the slightest apprehension. While the volume of time payment sales has increased tremendously because of the larger sales volume, the percentage of the total is little larger than it has been in the past. Such percentage increase as has taken place has been due to the fact that many persons, well able to pay the full purchase price of a car, have decided to pay for it on installments out of income rather than from savings. The case is cited of one man with an income of a thousand dollars a week who followed this plan.

National finance companies are examining credit risks even more closely than in the past and their losses on passenger car business are negligible. These companies have persistently refused to make their credit terms more liberal and are insisting on the completion of the contract in not more than twelve payments. They also refuse to take less than one-third down.

Ridiculous credit terms such as eighteen to twenty-four months are attributed to local companies which accept dealer paper without recourse and which have granted all kinds of terms to take business away from the national concerns which conduct their business along banking lines. There is said to be a strong tendency among dealers to abandon the local companies because of the fear that they might have to shorten their lines sharply if there were a credit stringency.

The national companies are steadily expanding their organizations and soon will have branches in virtually every good sized town in the country. It is significant that the Commercial Investment Trust has decided to increase its capital from nine million to thirteen million dollars. Less than six months ago its capital was increased from six to nine millions.

IN THE RETAIL FIELD

The Authorized Sales, Inc., of Asheville, N.C., has been chartered to manufacture and distribute all kinds of motor vehicles. Authorized capital is \$100,000, with \$10,000 subscribed by Charles W. Leland, Ralph R. Lindsay and Thomas A. Jones.

R. C. Buchanan and H. C. Yoder have taken over the agency for the Chevrolet car in Hickory and Conover, N. C., succeeding the Watson Motor Co.

Bryan-King Motor Co., Inc., Jacksonville, N.C., has been chartered with an authorized capital stock of \$20,000 and \$2,000 subscribed by W. T. Bryan and Cleora F. Bryan of Jacksonville, and V. H. King and L. R. King of Folkstone, N. C.

Stanley Motor Co., Burlington, N. C., has been chartered with an authorized capital stock of \$50,000 and \$5,000 subscribed by S. C. Stanley, Daisy Stanley, J. C. Hanner and H. J. Rhoades, all of Burlington.

Uzzell Chevrolet Co. of Greensboro, N. C., has been chartered with an authorized capital of \$50,000 and \$300 subscribed by T. A. Uzzell, Corrinne C. Uzzell and S. B. Clapp, all of Greensboro.

G. G. Zulliger of Tuscia, Wis., has disposed of his local business interests and moved to Rice Lake, Wis., where he is establishing a garage and service business. He has been granted the Maxwell and Chalmers franchise.

The Rex Garage, Inc., Sheboygan, Wis., has been organized by F. A. Meifot, A. J. Koehler and A. L. Meifot to deal in new and used cars, operate a garage and service business, and do a general automotive trade.

The Manitowoc (Wis.) Motor Sales Co., Studebaker dealer, has announced the appointment of Gerald Zander as general manager. He takes the place of Walter C. Kazda, who retains his financial interest but will devote his time to other interests.

The Zeisler Motor Co., La Crosse, Wis., a leading dealer and garage concern, has increased its capitalization from \$25,000 to \$50,000 to better accommodate its increasing business. L. A. Zeisler is president and general manager.

A Wisconsin corporate charter has been granted the Lake Geneva Auto Station, Lake Geneva, Wis., capital stock \$30,000. The objects are to conduct a sales and service business. The incorporators are W. F. Krueger, A. L. Lawrie and F. A. Stauffer.

Norman R. Jordan, owner of Automotive Electric Service, Fond du Lac, Wis., has filed a voluntary petition in bankruptcy, scheduling liabilities at \$1,000 and claiming assets of \$500.

J. P. Bertsche, president and general manager, Wisconsin Steamers, Inc., 452 Jackson street, Milwaukee, has been appointed distributor in Wisconsin and Upper Michigan of the McDonald Steamer, made by the McDonald Steam Automotive Corp., Garfield, O., and marketed through the Moore Motors Co., Columbus, O.

R. D. Rockstead, 2715-2719 Grand avenue, Milwaukee, distributor of the Apperson and Lexington, has been appointed also distributor of the Rollin.

The Nelson-Moehle Co., 525 Jefferson street, Milwaukee, has been named distributor of the Gardner in Wisconsin and Upper Michigan, in addition to the Stutz.

The Columbus Cadillac Co., Broad and Sixth streets, Columbus, O., has been appointed representative for Oakland cars in the Columbus district, and will conduct the agency temporarily in its present showroom. Later it expects to erect a separate Oakland agency.

Yates & Thornton, Petersburg Ill., dealers, have taken the Nash agency in Menard, Cass and Mason counties, under the McKenzie Nash Co., which now has three sub-agencies in the field.

The E. V. Kirby Co., Urbana, Ill., has disposed of two-thirds of its interests to E. S. and Nellie B. Hatcher of Springfield, Ill., and will be incorporated as the E. V. Kirby Co., Inc. Inventory of the business showed the two-thirds interests to be \$22,000 and stock was issued on this basis.

The Overland Willys-Knight Motor Co., 519 Fourteenth street, Moline, Ill., will expend \$10,000 upon a new sales and service station on site of its present location. Contract will be let within two weeks and work started immediately, H. C. Stahl and I. E. Hoogner, proprietors, announced.

The Cedar Valley Nash Co., 706 Second avenue, Cedar Rapids, Iowa, claimed local sales record in cars of the Nash class with 112 new cars retail, 226 wholesale and 110 used cars. The volume of business was placed at about \$500,000. The company has represented the Nash since 1917 and now is showing 15 models on its sales floor.

The distribution of the Auburn automobile in Dallas and Texas has been taken over by B. W. Wray, who has announced the formation of the Auburn Motor Co. Wray is a newcomer in the automobile field in Texas. Associated with Mr. Wray are Paul E. Farley and George McGrew.

The McMillan Sales Co., Spartansburg, S. C., plans the construction of an automobile sales and service building this spring, according to a recent announcement, at East Main and Alabama streets.

The J. L. Carroll Co. of Atlanta, distributors of the Kelly-Springfield line in the southeastern territory, announce the addition of the Ajax tire to the company's line, having been named exclusive distributors by the Ajax Rubber Co., Inc., in the territory.

The Franklin Motor Car Co. will build a \$150,000 sales and service building in Atlanta this year, according to a recent announcement of officials. The building will be two stories in height and located on West Peachtree street, Atlanta's automobile row.

The Atlanta branch of the Oakland Motor Car Co. has moved into a new building constructed for the company this year on Spring street.

Paulson Products Co., Cleveland, has been chartered with an authorized capital of \$5,000 to manufacture, buy, sell and deal in automobile specialties such as mirrors, visors and so forth. Incorporators are P. M. Astor, S. R. Klein, M. J. Monahan, S. C. Kabat and B. Becker.

Re-Nu Co., Cleveland, has been incorporated with a capital of \$10,000 to paint and repair all kinds of vehicles. Incorporators are Jacob Jenne, Phil Hodous, William Honer, Hal Richards and Fannie Jenne.

Fielding Motor Service Co., Canton, O., has been chartered with a capital of \$10,000 to buy and sell at both wholesale and retail motor vehicles. Incorporators are Orrin J. Fielding, Raymond H. Fielding, Fern W. Fielding, Nina F. Fielding and A. R. Turnbull.

The Greenwald Tire Co., Cincinnati, O., has been chartered with an authorized capital of \$30,000 to buy, sell and deal in tires, supplies and accessories at both wholesale and retail for automobiles. Incorporators are Isidor Greenwald, Sam J. Greenwald, Albert Greenwald, Jack A. Radin and Saul Zietonka.

Five new members were admitted to the St. Louis Automotive Accessory Association at its meeting last week. They are Moon Bros. Mfg. Co., Climax Co., Multiple Boring Machine Co., Jenkins-Guerin Oil Co., and the Panyard Piston Ring Co.

The Lindow Tire & Rim Co., 468 Milwaukee street, Milwaukee, has taken over the distribution in Milwaukee of the entire line of pneumatic tires and tubes for passenger cars and trucks, manufactured by the Republic Rubber Co., Youngstown, O. The Lindow company also distributes the Swinehart line of solid, cushion and tractor tires.

A distinct feature of the first "Golden Rule Day Sale," in 1924, conducted monthly by the business men of Chippewa Falls, Wis., to stimulate city and country trade, the Chippewa Valley Auto Co. offered a new Star phaeton, fully equipped, at the price of \$395, which was about \$175 less than the regular delivered price. Only one car was offered at this price, and it was purchased within fifteen minutes after the salesroom opened. The purpose of the offer was to introduce the Star as well as to furnish a feature bargain, each other merchant participating in the sale providing some unusual bargain.

Indicative of the generous increase in allotments made among Ford dealers for 1924 is the fact that the August Brandt Co., Appleton, Wis., has been given a mark of 720 cars for the new year, compared with 500 in 1923. The announcement was made at the annual banquet given by the company for its entire staff of employees. Although the increase amounts to 44 per cent, it was stated that the business of 1923 would easily have reached a similar percentage over 1922 if it had been possible to procure all the cars of the various models specified in sales orders within the twelve months.

Otto Klein, for several years head of the welding department of the Vulcan Mfg. Co., Fond du Lac, Wis., has resigned and opened a welding, cutting and brazing shop on his own account at 193 Military street, in the same city.

The J. L. Carroll Co., wholesale and retail tire distributor of Atlanta, and one of the largest exclusive tire dealers in the Southeast, moved this month into a new building constructed for the company at Spring and Harris streets.

The Three Twenty Eight Tire Co. is a new firm recently organized and incorporated in Atlanta as distributors of the Lee tire line in the Atlanta trade territory. The company is located in a new home at 328 Peachtree street.

Nash to Build Cars in the Mitchell Plant at Racine

\$405,000 Is Price Paid by C. W. Nash for Entire Mitchell Holdings

CHICAGO, Jan. 31.—C. W. Nash has purchased for the Nash Motors Co., of which he is president, the plants and realty of the Mitchell Motor Car Co., of Racine which will be added to the Nash family and in which Nash cars will be manufactured. Mr. Nash paid \$405,000 for the property which has an appraised valuation for forced sale of \$1,000,000, although the appraisal valuation of replacement is far higher. Bidding against Mr. Nash at the trustee's sale at Racine on Monday was the Hupp Motor Car Corp., which offered \$400,000 for the property, it being the company's intention, it is said, to use it for an engine plant in case its bid was accepted.

Having made 41,000 cars in 1923 in its two plants, one of which is at Kenosha and the other at Milwaukee, the Nash company in planning for a production of 60,000 this year felt the need for more factory room, so the Mitchell plant at Racine fits nicely into the picture. Nash now will have a string of plants within a stretch of 30 miles, all served by the Northwestern Railroad and all three on one main highway. The Racine plant with about 500,000 square feet of floor space is ten miles north of the Nash Six plant and general offices at Kenosha, where the company has 1,445,560 square feet of floor space, while 30 miles north of Kenosha is Milwaukee, where is located the Nash Four plant which has 410,250 feet of space. In addition Milwaukee also houses the Seaman body plant with 600,000 feet, a concern in which the Nash company owns half the stock and which therefore is included in the Nash family.

President Nash, here for the show, announced today that he will equip the Racine plant with modern machinery for the manufacture of Nash cars. The old Mitchell plants cover thirty acres of ground and include one four-story building 90 by 300 feet, the other buildings being one story structures of modern sawtooth construction.

MRS. ROBERT C. RUESHAW DIES

DETROIT, Jan. 31.—Mrs. Mary B. Rueschaw, wife of Robert C. Rueschaw, sales manager of Reo Motor Car Co., Lansing, died this week in that city. Funeral services were held privately.

New Chandler dealers announced last week are: G. Lee Hartshore, Salinas, Calif.; Grinnell Motor Co., Muncie, Ind.; A. A. Weed & Co., Johnstown, Pa.; C. N. Herod, Van Nuys, Calif.; Merrimack Valley Motor Co., Lowell, Mass., and the Valley Motor Co., Tarentum, Pa.

Lord & Wentz, 116 East Washington street, Springfield, Ill., have been appointed distributors for the Stutz line of cars in the Sangamon territory.

H. A. Coolberth has been named Columbia Light Six dealer in Enfield, Mass.

H. B. Norton has been appointed to sell the Columbia Light Six in Easthampton, Mass.

COMING MOTOR EVENTS

AUTOMOBILE SHOWS

Akron, Ohio	February	Automobile Dealers Co., Frank O. Neil, Manager.
Albany, N. Y.	Feb. 16-23	Albany Automobile Dealers' Association, J. B. Wood and L. Y. Long, Managers.
Albuquerque, N. M.	Feb. 7-9	Albuquerque Automobile Trade Association, E. G. Fuhrmeyer, Secretary.
Allentown, Pa.	March 1-8	Lehigh Automobile Trade Association, E. T. Satchell, President.
Atlanta, Ga.	Feb. 16-24	Atlanta Automobile Association, Virgil W. Shepard, Manager.
Atlantic City, N. J.	Feb. 2-9	Annual Atlantic City Automobile Show, E. M. Antrim, Chairman.
Bethlehem, Pa.	March 23-29	Lehigh Valley Automobile Show.
Binghamton, N. Y.	Feb. 4-9	Annual Show, L. M. Napper, Chairman.
Boston, Mass.	March 8-15	Boston Automobile Dealers' Association and the Commercial Motor Vehicle Association, Chester L. Campbell, Manager, 5 Park Square.
Burlington, Vt.	April 2-5	Ethan Allen Club, Thomas W. Parkhill, Chairman.
Calumet, Mich.	April	Central Storage Co., Jos. A. Savini, Manager.
Camden, N. J.	March 3-8	Camden Automobile Trades Association, M. T. Ivins, Manager.
Charlotte, N. C.	March 3-8	Charlotte Automotive Trades Association, George E. Wilson, Chairman.
Cincinnati	Feb. 9-16	Cincinnati Automobile Dealers' Association, Harry T. Gardner, Manager.
Columbus, Ohio	Feb. 4-9	Columbus Automobile Dealers Co., Anson B. Coates, Manager.
Dallas, Tex.	Feb. 11-17	Dallas Automobile Trades Association.
Deadwood, S. D.	Feb. 19-23	Deadwood Business Club, F. R. Baldwin, Manager.
Denver, Colo.	March 11-15	Denver Automobile Dealers' Association, F. F. Vic Rey, Manager.
Des Moines, Ia.	Feb. 25-March 1	Des Moines Automobile Trades Association, C. G. Van Vleet, Manager.
Duluth, Minn.	March 17-22	Duluth Automobile Dealers' Association, A. R. Kent, Secretary.
Fairfield, Ia.	Feb. 14-16	Automobile dealers Show, Harry Brown, Secretary.
Fort Wayne, Ind.	Feb. 5-9	Fort Wayne Automotive Trades Association, Chester Schiefer, Manager.
Goldsboro, N. C.	April 21-26	Chamber of Commerce, W. C. Denmark, Manager.
Grand Rapids, Mich.	Feb. 25-March 1	Passenger Car Dealers' Association, M. D. Elgin, Manager.
Great Falls, Mont.	March	Montana Automobile Distributors' Association, Lyman E. Jones, Manager.
Green Bay, Wis.	Aug. 25-30	Automotive Division, Association of Commerce, W. F. Kerwin, Manager.
Greenville, S. C.	Feb. 25-March 1	Greenville Chamber of Commerce.
Hartford, Conn.	Feb. 16-23	Hartford Automobile Dealers' Association, Arthur Fifoot, Manager.
Huntington, W. Va.	Feb. 24-29	Huntington Automobile Dealers' Association, G. B. Roberson, Manager.
Indianapolis	March 3-8	Indianapolis Automobile Trade Association, John B. Orman, Manager.
Kansas City, Mo.	Feb. 9-16	Kansas City Motor Car Dealers' Association, George A. Bond, Secretary.
Kingston, N. Y.	Mar. 6-8	Kingston Automotive Dealers' Assn., M. T. Southard, Secretary.
Lancaster, Pa.	Feb. 6-9	Lancaster Automobile Trade Association, J. E. Abel, Executive Secretary.
Lima, Ohio	Feb. 19-23	Lima Automobile Merchants Association, R. H. Phillips, Managers; W. H. Powell, Secretary.
Louisville, Ky.	Feb. 18-23	Louisville Automobile Dealers' Association, George T. Holmes, Secretary.
Logan, Logan Co., W. Va.	Mar. 10-15	Logan Automobile Dealers' Assn., P. L. Brothers, Chairman.

Madison, Wis.	Feb. 7-10	Madison Automotive Dealers' Association, O. S. Jacobson, Chairman.
Mankato, Minn.	Feb. 27-Mar. 1	Mankato Automobile Dealers' Association, E. J. Dillman, Secretary.
Middletown, Conn.	Feb. 8-12	Middletown Automobile Dealers' Association, Chas. H. Brewster, Manager.
Middletown, N. Y.	Feb. 5-9	Middletown Automobile Dealers' Association, Callahan and Partlan, Managers.
Milwaukee, Wis.	Aug. 25-30	Milwaukee Automobile Dealers' Association, Fall Show, Bart L. Ruddle, Manager.
Minneapolis, Minn.	Feb. 2-9	Minneapolis Automobile Trade Association, Walter R. Wilmet, Manager.
Mitchell, S. D.	April 17-19	At the Corn Palace, directed by P. M. Young.
Muskegon, Mich.	March 4-8	Muskegon Automobile Trade Association, J. C. Fowler, Manager.
Niagara Falls	March 3-8	Niagara Falls Motor Trades Association.
Oklahoma City, Okla.	March 24-29	Oklahoma City Motor Car Dealers' Association, E. T. Bell, Secretary.
Omaha, Neb.	Feb. 18-23	Omaha Automobile Trade Association, A. B. Waugh, Manager.
Orlando, Fla.	Feb. 12-16	Subtropical Midwinter Fair Association, C. E. Howard, Manager.
Pittsburgh	Feb. 2-9	Pittsburgh Automotive Association.
Portland, Me.	Feb. 25-March 1	Portland Automobile Dealers' Association, Howard B. Chandler, Manager.
Portland, Ore.	Feb. 9-15	Automobile Dealers' Association of Portland, Ralph J. Steahli, Manager.
Racine, Wis.	Feb. 7-10	The Racine-Journal News.
Reno, Nev.	June 2-9	Nevada State Automobile Exposition.
Sacramento, Cal.	Sept. 1-10	State Agricultural Society, C. E. Paine, Manager.
Saginaw, Mich.	March 4-8	Saginaw Automobile Dealers' Association, Guy S. Gauber, Manager.
San Francisco	Feb. 16-23	San Francisco Automobile Dealers' Association, G. A. Wahlgren, Manager.
Schenectady, N. Y.	Feb. 11-16	Schenectady Automotive Dealers' Association, John T. Henley, Manager.
Scranton, Pa.	Feb. 4-9	Scranton Motor Trades Association, Automobile Show, Hugh B. Andrews, Manager.
Sioux Falls, S. D.	Feb. 6-10	Sioux Falls Automobile Association, John P. Blug, Manager.
Springfield, Mass.	March 3-8	Springfield Automotive Dealers' Association, Harry W. Stacy, Manager.
Springfield, Ohio	Feb. 15-21	Springfield Automotive Trades Association, Ben G. Garven, Manager.
St. Louis	Feb. 17-24	St. Louis Automobile Dealers' Association, Robert E. Lee, Secretary.
Syracuse, N. Y.	Feb. 25-March 1	Syracuse Automobile Dealers' Association, C. H. Hayes, Manager.
Toledo, Ohio	Feb. 4-9	Toledo Automotive Trades Association, H. V. Buelow, Manager.
Toronto, Ont.	Aug. 23-Sept. 6	Canadian Automotive Equipment Association and the Automotive Industries of Canada, Gib Robertson, Secretary.
Troy, N. Y.	Feb. 2-9	Troy Automobile Dealers' Association, Frank M. Baucus, Manager.
Washington, D. C.	March 8-15	Washington Automotive Trade Association, Walter Lambert, Secretary.
Washington Hts., N. Y.	March 26-31	Washington Heights Automobile Dealers' Association, H. G. Stiles, Manager.
Yonkers, N. Y.	March 3-8	Automobile Merchants' Association of Yonkers, Callahan and Partlan, Managers.
Youngstown, Ohio	Feb. 25-March 1	Youngstown Automobile Dealers' Association, C. A. Baird, Manager.

CONVENTIONS

Albuquerque, N. M. May 26-31 U. S. Good Roads Exhibition.

The READERS' CLEARINGHOUSE

Questions & Answers on Dealers' Problems

Valve Clearances on 1920 Cars

Q—What is the clearance between the valve stem and tappet on the following cars? (Names of cars are omitted from the question.)

1—The most recent information we have on valve tappet clearance covers 1920 cars, although information on all of the cars mentioned in your letter is not available. The following information, however, is available.

Make of Car	Intake Valve Clearance	Exhaust Valve Clearance
Overland	.004	.004
Maxwell	.004	.004
Dodge	.004	.004
Dort	.003	.003
Nash	.008	.008
Buick	.010	.010
Oldsmobile 45-B	.006	.008
Oldsmobile 37-A	.010	.010
Hupmobile	.004	.004
Columbia	.004	.006
Oakland	.008	.008
Studebaker	.008	.008
Paige	.003	.004
Moon	.004	.006
Reo	.002	.002
Chalmers	.004	.004
Haynes	.004	.006
King	.007	.007
Liberty	.002	.003
Westcott	.003	.003
Chandler	.004	.004
Hudson	.004	.006
Pierce	.003	.003
Franklin	.010	.010
Stephens	.003	.004
Cole	.006	.006
Lexington	.004	.006
Jordan	.004	.006
Packard	.004	.004
Winton	.006	.006
Standard	.005	.005
Peerless	.008	.008
Cadillac	.002	.002

You also requested the valve tappet clearance on the Willys-Knight, but with a sleeve valve type of engine there is no such thing as valve tappet clearance.

2—On the same cars what is the angle of the valve seat?

2—This information is not available and we do not feel that it is necessary for a shop to have this information. The up-to-date shop should, of course, be equipped with a good set of valve refacing tools and reseating tools and then when some car comes into the shop and this job is necessary it is only a simple matter to check up the angle on the old valves in order to see which tool to use.

3—Give the firing order of the last three models of the cars mentioned above.—Andrew R. Remaley, Pittsburgh, Pa.

3—You are asking for information

The Readers' Clearing House

THIS department is conducted to assist dealers and maintenance station executives in the solution of their problems.

All questions are answered direct by letter, so the name and address should be given in full. This saves waiting for the answer to be published, which sometimes occurs several weeks late, depending upon the space available.

Readers' names will not be published with articles, if a request to this effect is received with the letter.

Inquiries not of general interest will be answered by personal letter only. Emergency questions will be replied to by letter or telegram.

Also state whether a permanent file of MOTOR AGE is kept, for many times inquiries of an identical nature have been made and these are answered by reference to previous issues.

Addresses of business firms will not be published in this department but will be supplied by letter.

Technical questions answered by B. M. Ikert, P. L. Dumas and A. H. Packer; Legal, by Wellington Gustin; Paint, by G. King Franklin; Architectural, by Tom Wilder; Tires, by a Practical Tire Man; General Business questions, by MOTOR AGE organization in conference.

which again is not required if you have a fundamental knowledge of motor cars.

There are several ways of finding the firing order on a car you have never seen before. One way is to take off the valve cover plate and notice which valves are intake and which are exhaust. Then watch one set, say the intake, and do not pay any attention to the exhaust valves. While watching the intake valves only, have someone turn the engine over by hand and notice in what order the intake valves rise. This will be the firing order.

Another way is to open the pet cocks in case the engine is so equipped and put little wads of paper in each pet cock. Then turn the engine over by hand and notice in what order the little wads of paper are blown up into the air. This will be the order in which compression occurs, which is also the firing order. If no pet cocks are available the spark plugs may be removed and the thumb held over the spark plug opening while the engine is cranked so that the order in which compression occurs can again be noted.

KEEPING EXHAUST FUMES OUT OF CLOSED CAR

Q—One of our customers has a model A 22 Durant coupe that after being driven 15 or 20 miles fills with exhaust gas so that the driver and passengers develop serious headaches. We have installed new gaskets in the exhaust line and have calked the joint where the exhaust pipe enters the muffler. We have also installed a new carburetor and ground the valves. We changed the oil and still do not notice any improvement.

When grinding the valves we noticed that the exhaust valve guides were worn, but did not replace the valves. There is on tail pipe on the muffler but a sort of deflector to throw the gas down. This is a 1922 model without an exhaust heater. Perhaps some of the Motor Age readers have experienced the same condition and can give us some assistance.—Tom Butler, Rutland, Vt.

A—The local Durant dealer advises us that they have only had one or two cases of this kind and each time found that eliminating exhaust leaks between the exhaust manifold and the muffler has overcome the trouble. However, you say that you already have taken care of these points.

It occurs to us that there is possibly some effect produced by the action of the air in going by the car which in whirling around the rear of the car has a tendency to carry exhaust fumes up into the body. This eddy current action is similar to that observed when a poorly shaped object is drawn through the water. The water curls around the rear end of the object as a sort of back wash.

If you can overcome the trouble in no other way, would suggest making an extension to put on the muffler so as to carry the exhaust to the extreme end of the car. It is also possible that some of our readers may have some ideas on the subject. We are advised that the looseness of the valve stems is natural and is not the cause of this condition.

WANTS CRANKSHAFT BALANCING COMPANIES

Q—Furnish address of a concern nearest Pittsburgh who is equipped to dynamically balance an automobile motor crank-shaft.—W. C. Hagan, Pittsburgh, Pa.

There are two firms in Philadelphia who have specialized on the production of dynamic balancing machines. They are the Olsen Testing Machine Co., 500 N. 12th street, Philadelphia, Pa., and the Vibration Specialty Co., Harrison boulevard, Philadelphia, Pa., the Lippercott Carwin Corp., Erie avenue and Richmond street, Philadelphia, Pa. There are firms in addition to these who balance crankshafts dynamically, but they are not in the Pittsburgh vicinity. One firm in question is the Gisholt Machine Co. of Madison, Wis.

They're Growing in Dunkirk, Too

Q—I would like to get plans for a two story building to be used for service, showroom, accessories and storage. The size of the lot is 60 by 200 ft. The lot runs from street to street. What do you think is the most practical layout.—Dunkirk Garage, Dunkirk, N. Y.

We have laid out a garage plan for you, 60 by 200 ft., but owing to the fact that you have given us so little information about the size of the departments, etc., we are unable to tell just exactly what to give you. However, the layout is quite flexible and if you need more shop room you can make the shop bigger at the expense of the garage or vice versa.

We are of the opinion that in as much as you have a street at the rear of your building it would be better to do away with the front entrance and use only the service entrance in the rear. In that case it would perhaps be better to reverse the position of the garage and shop so that the garage would have to be passed through before reaching the shop, rather than passing through the shop before getting to the garage.

The latter suggestion, of course, would be more suitable if you only had a service and sales department and only garage room enough for your own use. If, however, you use the garage for the storage of customer's cars and rent the spaces at so much a month, your scheme of the front entrance is the best.

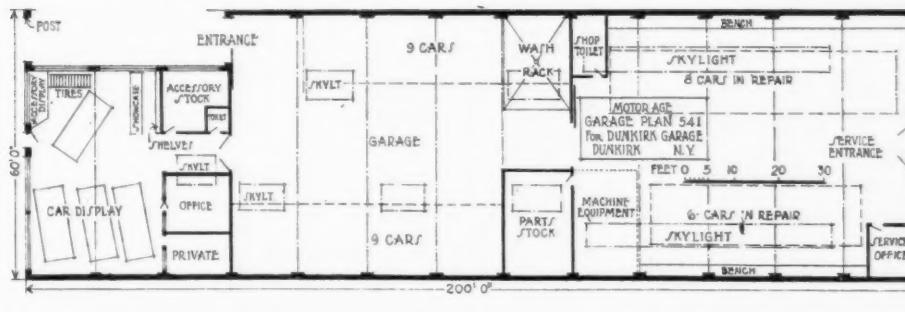
We suggest that you leave the entrance passage way opened rather than close it, as it will be so much waste space anyway and if there is a building next to you it will enable you to get more light into the showroom than would otherwise be possible.

TRANSMISSION NOISE AND WORN CYLINDERS

Q—A 1923 Gray car has a peculiar roaring or grinding noise in the transmission or clutch which can be mostly eliminated by a little pressure on clutch pedal. It is not present at all times but when present it can be heard with car in motion or car standing. Owner states that clutch and transmission assembly have been worked on but trouble has not been remedied. Could it be that transmission or clutch shaft bearing is worn or out of line, letting shaft vibrate which partly ceases collar or yoke?—Stucke Garage, Beardstown, Ill.

Your assumption that the clutch shaft is loose in the bearing or out of alignment is a very probable diagnosis. We would suggest that you inspect the clutch shaft rear bearing which would be the transmission front bearing for looseness longitudinally. If adjustment of this bearing does not eliminate the noise it is probable that looseness at the clutch pilot bearing in the flywheel will account for the noise.

2—After putting in a set of McQuay-Norris concentric step cut rings in a Ford No. 2 cylinder developed a rapping that I have been unable to locate. It sounds just like the piston hitting the head gasket. When it raps, which is not all the time, it



Architectural Service

IN giving architectural advice, MOTOR AGE aims to assist its readers in their problems of planning, building and equipping, maintenance stations, garages, dealers' establishments, shops, filling stations, and, in fact, any building necessary to automotive activity.

When making request for assistance, please see that we have all the data necessary to an intelligent handling of the job. Among other things,

we need such information as follows:
Rough pencil sketch showing size and shape of plot and its relation to streets and alleys.

What departments are to be operated and how large it is expected to be.

Number of cars on the sales floor.

Number of cars it is expected to garage.

Number of men employed in repair shop.

How much of an accessory department is anticipated.

is regular. It disappears when No. 2 cylinder is shorted.

I have done everything that I thought might stop it; tried new piston, new rod and different rings. Cannot figure why it should make that rap when before those rings were installed there was not a sound like that. I put in a set of oversize stem valves, thinking that they might be too loose in the guides, but with no difference. Cannot see anywhere, where anything might be hitting something to make that noise. Otherwise the Ford works good, plenty of power and never misses a "lick."

2—Remove the cylinder head on this engine and note whether No. 2 piston comes up higher than the remaining 3. If the piston ring on the No. 2 piston comes out of the cylinder bore more than $1/16$ of an inch it is probable that the explosion pressure causes the ring to snap against the cylinder giving rise to the click which you have noticed.

Still another possibility is that this particular cylinder has a ridge worn in it either at the extreme bottom position of piston travel or at the extreme top position. We presume that you tightened the connecting rods and piston pins when installing the new rings and this of course will slightly change the stroke which might account for the piston rings striking a high spot on the cylinder bore with the consequence of noise.

Although it is generally recognized that the concentric type of piston ring is superior to the eccentric type because of the fact that it does not crawl in the grooves and has less groove wear, it seems that in some installations the concentric ring in the Ford engine causes decided rattle. It may be due to the fact that the concentric ring has a little less wall pressure than the eccentric Ford ring and with this in mind we would suggest that you retain the concentric ring for experimental purposes. However, with these rings be sure that the top ring has the ring gap on the non-pressure side of the cylinder. In other words have the ring gap on the side of the cylinder opposite the valves and spark plugs.

As a last resort should you not be able to detect any variation in the diameter of the cylinder at the position previously

noted would suggest that you try a Ford ring in the top groove.

From experiences of MOTOR AGE readers it seems that in practically every case this ring clicks occurs on either cylinders No. 2 or No. 3. The reason for it occurring in these cylinders is explained by the fact that the carburetion is not exactly uniform and that probably cylinder No. 2 and No. 3 receive slightly better charge. We would appreciate hearing from you regarding the results of the test suggested.

MAIN BRUSH SETTING WHEN NO ADJUSTMENT IS PROVIDED

Q—Is it necessary on all generators to set the main brushes so that the armature will not rotate when current is applied and the third brush is lifted? We have come across generators with stationary brush rings where the armature would rotate with the third brush lifted. What is to be done in cases of this sort?

1—Where the main brushes are not adjustable the maker of the machine tries to set the commutator on the armature in such a way that the brushes will be on neutral. However, in production in a big factory there will always be some variations so that the exact neutral point will not be attained. In cases of this sort the only thing to do is to forget the test unless arching at the brushes is so bad as to cause serious brush or commutator trouble. If this is the case it might be necessary to have a different

2—What can be used as a substitute for a growler where alternating current is not available?—F. M. Berry, Tekoa, Wash.

2—A subscriber recently advised us that a growler will work on 110 volts direct current if connected in series with a K. W. Master Vibrator. It is also necessary to have a number of 110 volt lamps in parallel with each other and this bank of lamps also in series with the growler. If a master vibrator is not available, a Ford coil with the secondary shorted was said to give fairly good results. The growler action will be increased by increasing the number of lamps that are used in the lamp bank.

Valve Timing Wanted on Kissel

Q—Give valve timing for 1915 Kissel, model 60.

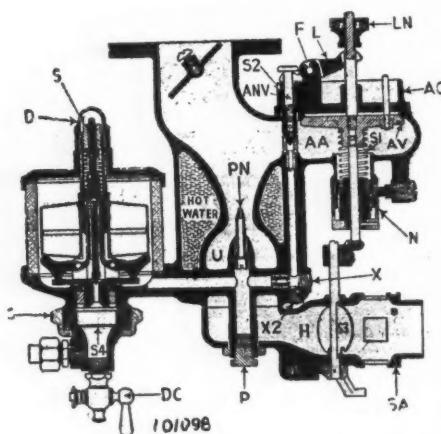
1—The exhaust closes 10 degrees after top dead center and opens 45 degrees before bottom dead center. The intake opens 15 degrees after top dead center and closes 50 degrees after bottom dead center.

Oiling of 1915 Kissel

2—Explain the oiling system. There is a small shaft projecting from front end of the oil pan which has fastened to it a crank and slide handle with several notches for adjusting. Is this connected to the oil troughs?

2—An oil pump sends oil to the troughs into which the connecting rods dip, this oil is carried through a pipe which runs the full length of the engine and in which there are a number of holes. The lever at the front end of the engine makes it possible to turn this pipe so that the oil holes point up or down, more or less. As the lever is pushed down it raises the nozzles and increases the percentage of oil which goes into the troughs. As the lever is moved up it causes the streams of oil from the pipe to be directed more nearly downward, so that less oil is supplied for the use of the engine.

Adjustment of Model C-3 Carburetor



3—Give directions for setting the Stromberg carburetor, which is a model C3.

3—An illustration of this carburetor is shown. There are no adjustments to the gasoline, the low speed adjustment is taken care of by means of nut "N." This should be loosened until the air valve spring comes away from its seat and should then be tightened until the valve just touches the seat. The nut should then be turned two complete revolutions to give the valve some pressure on the seat.

The high speed adjustment is taken care of by means of the nut "LN," which controls additional supply of gasoline to the mixture at the time the air valve is operating. The average adjustment is such that the nut "LN" is $\frac{3}{32}$ inch above the lever "L." This adjustment may need to be changed, however, to suit the high speed characteristics of the engine. The gasoline level adjustment is important on this carburetor, it should

be about 1 inch from the lower edge of the glass. In case it is obviously wrong, remove the dust cap "D" and turn the adjusting screw until the proper level is obtained. If the gasoline is too high, screw the nut down.

Bosch Duplex Coil on Berling Magneto

4—We have a Curtiss OX5 engine fitted with a Berling D-81 magneto. Is it possible to use a Bosch duplex coil with this magneto and use a storage battery to facilitate starting? If so, show proper connections.

4—We do not happen to have a diagram of the model D-81 Berling magneto, but to the best of our knowledge the Berling magneto was not made suitable for Duplex operation. You can, however, determine this by taking off the interrupter cover and looking to see if there are two brushes on the interrupter which rotate and make contact with a two-part commutator on the interrupter cover. If this is the case and there are two terminals extending from the interrupter cover you can use the Bosch Duplex coil.

On the Bosch Duplex coil you will find either three or four terminals. Two of the terminals will be marked B1 and B2, and these should be connected to a 6-volt battery. The other two terminals will be marked M1 and M2, and these should be connected to the two terminals on the interrupter cover.

In some of the Duplex coils, where only three terminals were used, there was a combination terminal, this being used for one of the battery connections and one of the magneto connections. After such a coil is connected up it is necessary to try the magneto with switch in the battery position, and if the results are poor, reverse the wires either at the magneto or at the battery.

If the magneto is of the straight high tension variety and has only one interrupter terminal you can connect the M1 and the M2 wires, one of them to the frame of the magneto and the other to this terminal. In this way every other spark will be made stronger and every other spark will be made weaker, but this may make it possible to get a start where it would otherwise be difficult, the engine hitting on every other cylinder.

Then as soon as the engine starts you can quickly snap the switch over to the Mag. position and the engine will then run and hit on all cylinders.

On the model OX5 engine the Berling magnetos were sometimes straight high tension magnetos and sometimes the distributor was designed with an extra contact and an extra distributor brush for use with a booster type magneto. If you find a terminal in the center of the distributor, it is possible that the magneto is of this type. If this is the case, the easiest way of starting this engine is to use a booster magneto, and first, with the ignition shut off, turn the engine over so as to get a charge of fuel in each cylinder and then turn on the ignition and crank the booster magneto.

Wiring of 1915 Kissel Model 60

5—Show wiring diagram for 1915 Kissel car, model 60, which is equipped with a Bosch ZR6 magneto and Esterline generator and starter.—W. W. Bissell, Zearing, Iowa.

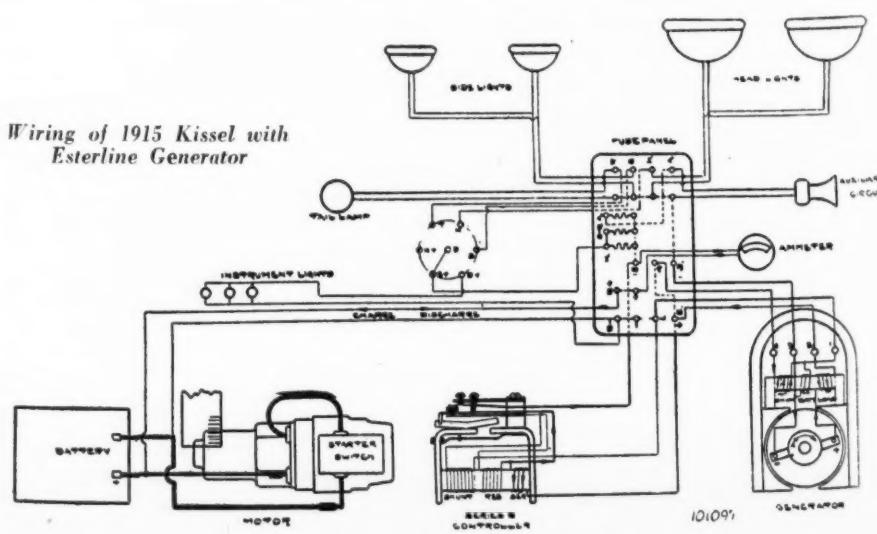
5—The wiring diagram is shown in accordance with your request, but you will notice that it does not include the wiring of the Bosch magneto. This is, however, very simple, for it means merely connecting the distributor to the spark plugs with high tension wiring and then having a single wire run from the interrupter to the grounding switch, the other terminal on the grounding switch being connected to the frame of the car or engine.

CUTTING WINDSHIELDS FOR SPOT LIGHT INSERTION

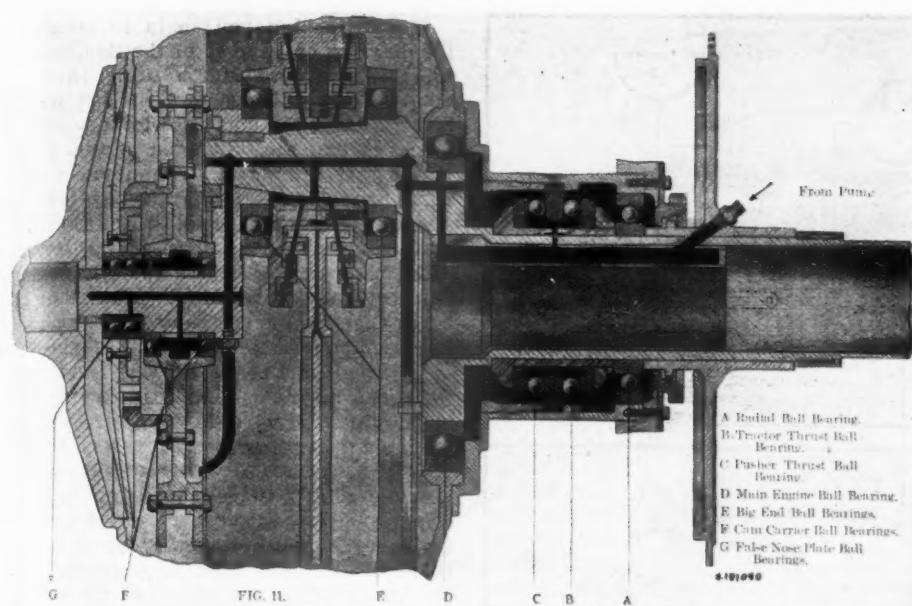
Q—Advise how to make holes through the windshield glass for the installation of the windshield type of spot light.—Ben Dunn, Briarcliff Manor, N. Y.

Concerns making these lights can also supply the equipment for cutting the hole in the glass. It consists essentially of a bracket attached to the windshield for locating the hole and a grinding fixture which is operated by an electric drill. Some abrasive compound such as valve grinding compound is used on the glass to enable the grinder to work its way through and make a smooth opening. We would suggest your taking this matter up with any concern whose lights you intend to handle.

Wiring of 1915 Kissel with Esterline Generator



Oiling System of 80 Hp. LeRhone Engine



Q—Supply lubrication chart for an 80 h.p. LeRhone rotary engine.—H. M. Strong, Provo, Utah.

A diagram of the oiling system is shown in accordance with your request. The pump delivers oil to an inclined thimble in the engine back plate, which is mounted opposite to a hole in the crankshaft. The oil passes through this hole into a pipe leading to the long end of the crankshaft. A branch from this pipe leads to the pulsator glass. The crank webs, crank pins, and short end of the crankshaft are drilled through to form an oil lead, from which branches are taken to lubricate the various parts of the engine.

The false nose plate ball race is lubricated through a restricted opening in the short end of the crankshaft. The cam carrier ball race is lubricated through a restricted opening in the eccentric portion of crankshaft short end. The cam, cam rollers, rocker arms and tappets are lubricated through a curved pipe leading from the restricted opening at the base of the short end crank web.

The big end ball races, connecting rod shoes, gudgeon pins and cylinder walls are lubricated through an opening in the crank pin, series of holes in connecting rod shoe guides, holes through shoes to base of connecting rods, and holes through connecting rod small end. The cylinder walls are lubricated through a pipe from opening in lower side of crank pin adjacent to long end crank web.

The thrust race, thrust box, ball race and main engine ball race are lubricated through a restricted opening from the main oil pipe inside crankshaft. The pulsator glass is connected to the branch from the main oil pipe. The engine speed may be calculated from the number of pulsations per minute as follows: R.p.m. of engine equals pulsations per minute times 27.7.

The oil pump is mounted on the back plate, opposite the magneto, and is driven by the same large wheel. It con-

sists of a casing containing the oil and a piston working in an oscillating cylinder which has a single port.

In one position of the cylinder, during the suction stroke, the port is open to the oil in the casing. In the other position of the cylinder, during the exhaust stroke, the port is open to the delivery from the pump. The cylinder is mounted on trunnions or pivots, and the piston is operated by an eccentric, which reciprocates the piston and causes it to oscillate the cylinder. The eccentric is driven by a worm and worm wheel inside the pump casing. A hole at the top of the casing permits air to escape when the pump is first filled with oil. This hole is normally stopped by a screwed plug. Oil is fed to the casing by gravity.

TIMING SLEEVE VALVES OF 1920 WILLYS-KNIGHT

Q—We received your letter of December 8 in regard to our question on valve timing of Willys-Knight 1920. What we wanted to know was how the flywheel should be set when the mark on the camshaft gear corresponds with the mark on the gear case.—Zeeland Electric Service, Zeeland, Mich.

A—In timing the valves of the 1920 Willys-Knight it is necessary to set the flywheel on the mark 1-4 E. C. (exhaust closing on cylinders 1 and 4).

Then remove the exhaust manifold and drop a light into the cylinders so that it is easy to see when the exhaust port is opened or closed. Then turn the gear which drives the eccentric shaft in a clockwise direction, which is the normal direction it will go when the engine is running. At the same time watch the action of the exhaust sleeve. When the exhaust port has opened and then is just about to close with the sleeve coming down, stop the rotation of the eccentric shaft gear.

When the main bearings of an engine are quite free it is sometimes found that this moving of the sleeves will also move

the pistons and get the crankshaft out of time. For this reason it is well after setting the exhaust sleeve to again look at the flywheel to see that it has not moved from the 1-4 E. C. setting. With both the crankshaft and the eccentric shaft in their proper position the chain may be applied.

If the engine is left in this position without being moved it is also the firing position of the No. 1 cylinder. If it is not convenient to drop a small light into the cylinder in order to see a small crack of light when the exhaust valve is closing, a piece of thin paper like a cigarette paper may be used and just at the instant this is pinched is the instant at which the exhaust sleeve is in the proper position.

CHRONICALLY BURNS OUT BEARINGS

Q—We are having trouble with the Rutenber engine in a Paige model 39. This engine constantly and chronically burns out the connecting rod bearings. The oil lines at present are drilled with holes to conform with dip troughs. Therefore the oil gage does not register to more than three points for just a few minutes when motor is cool, no pressure indicated after that, but when oil lines are soldered up the gage shows up to extreme limit almost all the time. There is no oil leak in motor at any time.

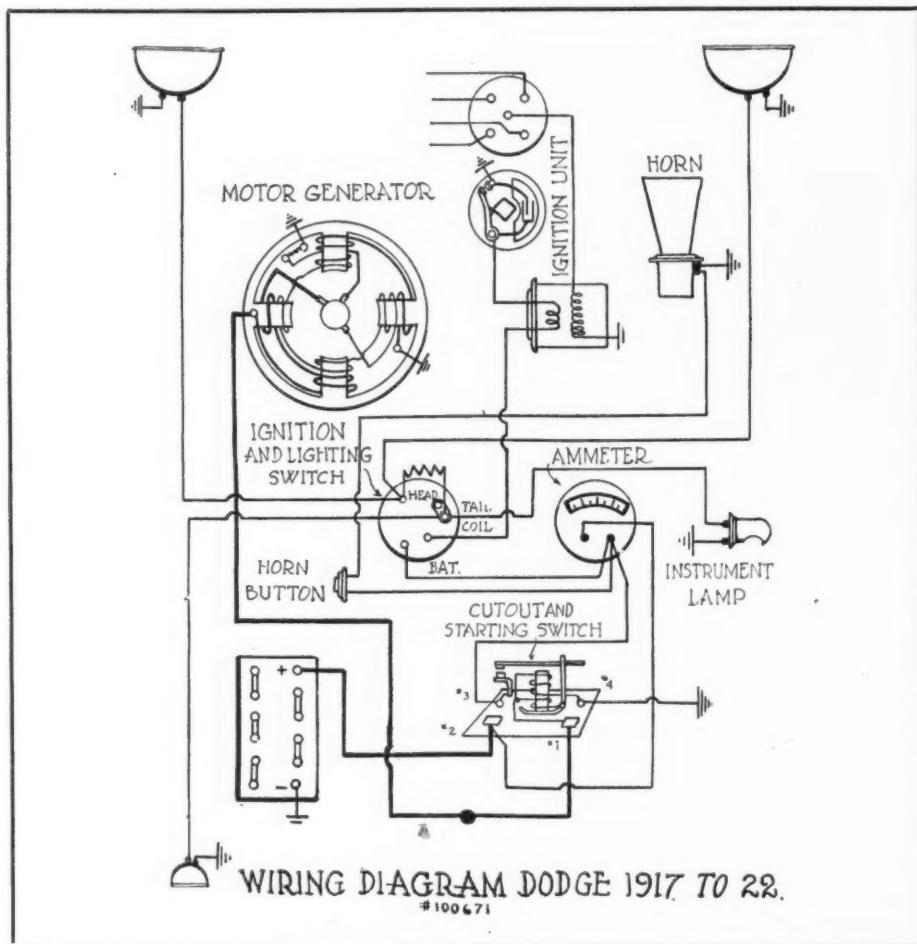
Engine is equipped with cast iron pistons. We do not know the make or weight. The rings are American hammered and we do not know the clearance between skirt and cylinder. One thing we know is that the main bearings do not loosen up to any extent and that the cranks positively are round and not scored. No. 2 rod burned out three times, No. 1 once, No. 4 once, No. 6 once, No. 3 twice to my knowledge. This engine is not equipped with a hot-spot.—A. D. Stuehm, Peotone, Ill.

Remove the crankcase and solder the holes that were previously drilled in the oil distributing pipe. Then redrill them to one-half the diameter originally used. In other words what we want you to do is to have these holes of a sufficient diameter that it will give you maximum gage pressure at 35 m.p.h. It will take some experimenting to find the right diameter of hole and as a starter we would suggest that hole about 3/64 be tried as an experiment.

You will find when experimenting on this hole drilling proposition that a difference of .007 of an inch will give a very wide variation in the gage reading and what we want you to do is to get the holes of the size that will give you normal pressure. At idling speed the pressure should be 1 to 3 pounds and in 30 m.p.h. should be about 15. After you have done this remove the inlet manifold and install one of the replacement type of hot-spots. As this has been a chronic case with you we would appreciate greatly hearing from you the results of our suggestions.

One other thing to be careful of is to see that the two main bearings which do not take the thrust of the crankshaft should have at least .010 end play. This end play is necessary to allow drainage of the oil out of the main bearings for its return to the sump. On the one bearing that takes the thrust of course you will have a tight fit against the flange of the shaft.

A Real Trouble Shooter Studies the Circuits



Q—We have a 1917 Dodge car. If the car is slowed down to a speed of 12 m.p.h. the generator becomes dead and will not charge again even when the speed is increased. It will charge again, however, if the starter switch is operated, but if the starter switch is operated at high speed it burns out the lights. If the starter switch is operated when the car is standing, however, it makes the lights get dim.

1—We are showing a wiring diagram of this car and would suggest that you check up the cutout and its connections. It is possible that the ground wire running from the No. 4 terminal of the cutout to the engine or frame of the car is disconnected. If you have a voltmeter you can start up the engine and with the engine running slowly take a voltage reading from the terminal of the motor generator to the frame of the car. This voltage should increase as the engine speed is increased. If there is no voltage obtainable, the trouble is due to a poor connection in the field winding of the generator, or what is more likely, it is due to oil soaked brushes.

However, if the generator shows a voltage but the cutout does not operate to let the current come through the ammeter to the battery it is possible that the No. 4 ground wire is disconnected as above indicated.

We are not absolutely sure of the trouble from your description, but one thing that occurs to us is that possibly the wire from the ammeter running down to No. 2 terminal of the combination cut-

out and starting switch has been connected to the No. 1 terminal by mistake. This might account for trouble you have, due to lamps burning out. It is normal, however, for the lamps to get slightly dim when the starter is operated, as the battery voltage is pulled down by the current taken for starting.

If the voltage does not build up at the generator it is possible that the field fuse makes a poor contact in the clips and it would be well to remove it and sandpaper the ends of the fuse and also the surfaces of the clip contact.

Torch Wanted for Welding

2—Is there a gasoline brazing torch on the market that can also be used for light aluminum welding? If so, will you give us the name of some concern that can supply one?—N. J. Nyberg, La Point, Utah.

2—This information will be given by letter.

HE SAID IT SHOT THE TROUBLE—THANKS—WE LIKE TO KNOW

Q—We are having trouble in locating what seems to be a short circuit of a Simms Huff 5 brush type starter generator as found on the 1919 Maxwell car. We have tested the armature with the growler method, have taken off the fields and tested all connections with a test lamp and we are unable to find out why the machine does not work. We looked up your diagram as shown in Motor Age of September 13th, 1923, but even following the diagram we cannot get the machine to work and act as a generator and starter. Could you give diagram of the brush connections as they should be fastened to the respective fields, also advising if any of

the brushes should be grounded on the holders to the end plate.—J. Conde, South Dakota.

We are asking you again to refer to the diagram on page 45 of the September 13, 1923, issue of MOTOR AGE. In this diagram you will see that the left hand brush makes a connection to the series field and that the other end of this field winding is grounded. The upper right hand brush has a similar connection to another series field and in addition to that there is a connection to the lower right hand series field. These are the only ground connections which should be found in the machine and if the brushes are disconnected from the series field winding there should be none of the brushes which show up a ground test when checked up with a 110 volt line with lamp in series.

The brush shown at the bottom of the diagram and a little to the left is the regulating or fifth brush and from it there are two circuits, one going through three of the field coils to a ground on the frame of the machine and the other going through the other three field coils to a ground. If you should lift this fifth or regulating brush from the commutator and then connect a battery from the brush to the frame of the machine you would have current going through the field windings. This current may be in the nature of 5 or 6 amperes.

Another test that we would suggest making would be to have all of the brushes in place and all of the connections as shown in the diagram and then connect a battery from the frame of the machine to one of the leads. This should cause the machine to run as a motor. If you have a fairly high reading ammeter and connect it in series you can at the same time observe the current taken by the machine. If the operation is rather uneven and jerky and if the indication on the ammeter is also uneven it indicates the possibility of a ground or short in the armature.

If, however, the running is fairly steady you should then drive it on a test bench at a little higher speed and discharge current should come up to zero and then go over to the charge side of the meter.

In testing the machine as a motor it should run freely drawing 5 amperes at 13 volts and should revolve at about 1100 r. p. m. Current much in excess of this will indicate armature trouble. If the generator does not revolve as a motor when tested in this way, it is possible that the field circuit is open.

As you state that you have taken the field windings off there is a possibility that in replacing them you have the wrong polarity at some of the fields. We would accordingly suggest sending current through the shunt field only and checking with a compass used outside of the frame to see if the polarity changes at each pole. Another way to test with the armature removed is to have a small electromagnet such as a bolt with a fine winding on it, and this should be energized from a battery and should be attracted at every other pole and repelled at the intermediate ones.

Pinion Bearings on Mitchell

Q—Give the following information on a Mitchell Big Six model C-42. How many bearings are there on the drive pinion shaft? Is there one ball bearing in the pinion shaft carrier and one ball bearing next to the pinion? Then is there a small roller bearing in the outer end?—Illinois Subscriber.

We are publishing illustration of the drive shaft used on model D-40, as the exact information on model C-42 is not available. We believe, however, that as these cars were built at about the same time that the construction will be found similar. In this illustration it will be seen that there is a large ball bearing just forward of the pinion and another smaller bearing within 6 or 8 inches. At the transmission end of the driveshaft there is a portion marked "pinion driveshaft sleeve." This is apparently a plain bearing which takes care of the front end of the driveshaft.

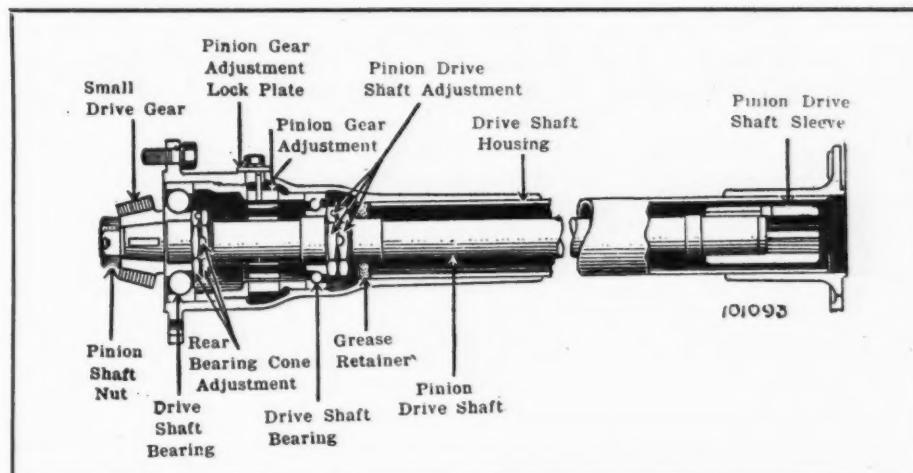
BATTERY TEST ON COMPLETE MAGNETO NOT SO GOOD

Q—I would like to have a diagram of an ignition tester for testing out magnetos. The way I would like to hook it up is with an automatic vibrator and condenser, using the condenser test separate and the winding and the condenser together when needed that way. I am trying to hook it up without having to drive the interrupter.—Pennsylvania Subscriber.

The magneto test to which you refer is based on using the armature of the magneto just as if it were a battery ignition coil. The automatic vibrator is a device which has been known as a Master vibrator and some years ago was used on Ford cars. The illustration given shows the internal circuits, both of the magneto and the Master vibrator.

This test does not give very good results, due to the fact that for a battery ignition test it is necessary to have suddenly changing magnetism in the battery ignition coil. In the same way it is necessary to have suddenly changing magnetism in the armature which is being used as a battery ignition coil. The presence of the permanent magnets tends to give poor results with this test. The results may be fair, however, if the armature is first turned until the interrupter points are just opening.

This will give the armature position where it is approximately vertical. The



shaft should then be held in this position, although it will try to turn when the battery current flows through. It is essential that the interrupter points be open or the battery current will not flow through the armature winding. With this test sparks should jump at the safety gap.

If the magneto is taken apart a better test can be made on the armature by wrapping a piece of wire around the shaft and bending it over toward the slip ring so as to make a gap from $\frac{1}{8}$ inch to $\frac{3}{16}$ inches.

Your idea of using the condenser or not using it will not work, and if a magneto does not give a good spark there is no way to tell whether the fault is in the armature condenser or in the armature winding, and it is then necessary to take the armature apart, although this should preferably be done by someone familiar with this work.

In the Bill Fixit article of October 18, 1923, in Motor Age you will find complete instructions for overhauling and testing high tension magnetos.

ACTION OF KEROSENE IN THE RADIATOR

Q—We have a customer who is using kerosene in his radiator on a model 1921 Oldsmobile as an Anti-Freeze solution. Inform us what bad effects if any, this will have on the engine, either now or in the future.—Buford's Garage, Anna, Illinois.

On cars which have a pump to circulate the water in the cooling system kerosene can be used without any serious disadvantage. We have known of a car operated in Detroit three winters in succession with kerosene in the radiator with good results. The heated kerosene however, gives off a vapor which is sometimes objectionable to the occupants of the car.

There is also the theory that the vapor given off is combustible and might cause an explosion. However, as this vapor would be mostly given off through the overflow pipe and go down below the engine, we do not believe that there is much chance of trouble on this score. The kerosene will attack the rubber hose connections and necessitate their replacement perhaps a little more frequently than when water is used. How-

ever, this is not a very serious objection.

In engines which have thermo-syphon circulation the kerosene is not so good for when it heats up it does not expand enough to give good circulation and the engine may overheat. In the spring the cooling system should be thoroughly washed out with gold dust water or some similar solution which will remove the kerosene.

NO DANGER FROM BATTERY ACID FUMES

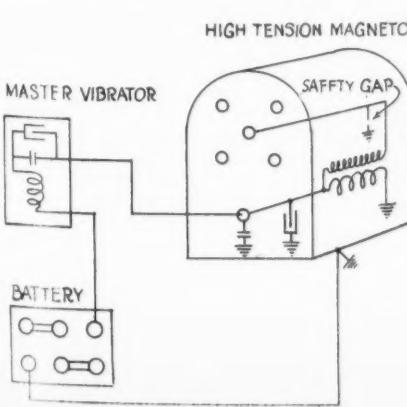
Q—We have a garage with two rooms one a large one and the other a small one. In winter we make a practice of working in the smaller room and in this same room we also charge storage batteries. The fumes from the batteries do not bother us or disturb us to any extent but we want to know if they have any harmful effect on persons in the room either at the time or later on.—Nebraska Subscriber.

We have never heard of any trouble due to acid fumes as far as the health of the mechanic or electrician is concerned. The detrimental effect is noticed on the clothing when batteries are carried and the acid is allowed to get on the clothes, but we do not believe that the fumes have ever been considered as injurious. It is more or less a matter of getting used to the atmosphere, for the battery man goes about without noticing the condition of the air while his customer who comes into the battery shop immediately starts to cough or sneeze. We feel that you are safe in working in this room.

REFITTING SHAFT PILOT BUSHING

Q—In disassembling an Oldsmobile 1921 4-cylinder model clutch I found the engine clutch shaft pilot bushing had seized to the shaft pilot, carrying the bushing around in flywheel fit until it had worn it about 1-32 large. Would it be advisable to remove the flywheel and bore out the original $1\frac{1}{8}$ bronze bushing fit to 2 inch diameter and use a double ball bearing. We have such a bearing with dimensions giving perfect fit and exact width to the shaft pilot, but would require a larger outside diameter for flywheel fit. Advise if this would be practical?—J. C. Smith, 21 Elbert St., Schenectady, N. Y.

This scheme is entirely practical, and would advise that the bearing be given thorough lubrication before installation, as it perhaps will be difficult to get lubricant to it after once installed.



SQUEEKS & RATTLES

THE shows are history. So is 1923. That part of 1924 which will sell automobiles is just ahead. And you'll have to gallop if you expect to keep going.

History is always interesting, but it's only good for one thing. You can see in it the mistakes the other guy made and then take the necessary steps to avoid those mistakes yourself.

For instance, we learn that Caesar went out for a drive one day and along came Antony and dated up Cleopatra for that night.

When Caesar found out, he sold his car to Warshawsky, killed eight of his personal servants and, gathering his clothes together in a flower vase, lit out for new fields.

The lesson we learn here is not to go driving without the wife, because the chances for picking up something are few indeed and since one can never be sure of what one has, one had better be sure that one has it, or vice versa, or etc., or \$6.50 a pint.

So with 1923. Check over your dope and see how many things you can find that you did wrong and then don't do them—simple, isn't it?

"In the pursuit of happiness, we are all likely to exceed the speed limit."

Sporting Item

Luis Angel Firpo, contender for the heavyweight championship, has taken over the Veltie distribution in about eight-sixteenths of South America. Good luck, Luis—but be careful, Old Man Used Car is a far more dangerous opponent and packs one hell of a lot better punch than Jack Dempsey ever did.

We Take This Opportunity

To kick. During show week, we attended gangs of banquets, luncheons, meetings, gatherings, tribunals, councils and whatnot. First off, we want to know if chicken farmers have any ground for raising such a fuss. We never want to look a chicken in the face again.

Next year won't somebody be original and serve corned beef and cabbage at one of their feasts?

And next year, won't somebody please say that this year was the greatest in history and that 1925 will be greater, if we all work hard?

Installment Plan Habit

Judge: "\$25 and costs."

Speeder: "Is that cash or can I pay it on time?"

Judge: "Cash, or, if you desire, you can have thirty days." C. E. PACKER.

Motor Row Anthology

I was for years and years
The chief of motor row,
As head of the club,
I told the others exactly how
A distributor put it over—
How he got dealers,
How he made money.
A few, not very many
Knew all of the time
I was no organizer, a few
Not many, knew that I thrived
By breaking other men
I sold many cars in towns
Where they could not be sold
At price on trade acceptances.
My policy was to get mine
And let the poor local
Dealer go broke on trades.
C. J.

Fable

Once upon a time, a tourist, passing through a strange country, stopped and asked a native for directions for reaching the next town by the most direct route.

The native gave him the correct information.

Remy via BERT.

Police were called to quell what threatened to be a riot in the lobby of the Coliseum, at about ten o'clock on Saturday, opening night of the Chicago show. Two women got together and each insisted that they had sat in more cars than the other. The only way they could satisfy the infuriated ladies was to let them go back in and see which one could sit in all of the cars and get through first.

Transportation

I am the pioneer, the blazer of the trail;
Upon my prowess mankind shall succeed or fail.
I am the benefactor and the artisan,
Whose skillful hand is evident in every plan.
I am a living monster huge, whose endless girth
Entwines and succors every nation of the earth.
I am the educator and the builder great;
Upon my footsteps progress of the world shall wait.
All things of human consequence do I embrace;
I am the conqueror of distance and of space.

TRANSPORTATION.

Charge

The chairman of the gas company was making a popular address.

"Think of the good the gas company has done," he cried. "If I were permitted a pun, I would say in the words of the immortal poet, 'Honor the light brigade.'"

At this point a consumer jumped up with the shout: "Oh, what a charge they made!"

LEW—

Speaking of dry cells:

is there any connection

between a divorce lawyer
and a rotten separator?

—HAP

Try a Turkish Bath

Clearing House reader says, "We have a 1918 car which has been getting hot ever since the owner put ginger in the radiator to stop a leak. It gets hot by spells. What would you advise us to do?"

The Passing of a Prospect

Parks his old bus near the door,
Sees new models on the floor;
Makes a dicker, adds some jack,
Drives away the brand new hack.

Remy via BERT.

A New Way

"This is leap year, all right," said the bachelor pedestrian as he nimbly leaped from in front of the new car driven by the spinster lady.

NON-SKID

Definition

A jay walker is a man who crosses the street without any intention of getting to the other side.—SHIP.

"Instill the fear of a \$25 fine or a day in jail and a jay walker will think twice before ambling down the street. Take from him the right of damages for personal injuries, received when he disobeys traffic signals."

"In Paris, if a person is knocked down by a motor vehicle without waiting for the signal, he is arrested and not the driver!"

So reads a section of an article in Motor Transport. That's the proper spirit, all right and it would do away with the parking problem, very largely, too—the problem, then, would be bigger jails.

Or, pay a bounty for every jay-walker bumped. \$5 for hitting one and \$15 for killing one. A \$25 fine to the motorist who goes after one and misses him.

Are you making it a higher score for '24?

LEW BRICATION.

Current Motor Truck Specifications

(This list comprises trucks distributed on a national basis)

MAKE AND MODEL	Tons Capacity	Price	ENGINE		REAR AXLE	TIRES		MAKE AND MODEL	Tons Capacity	ENGINE		REAR AXLE	TIRES											
			Make & Model	Bore & Stroke [§]		Clutch Make	Gearset Make			Make & Model	Bore & Stroke [§]		Clutch Make	Gearset Make	Final Drive									
Acme.....	20 3/4-1	.....	Co-N.	3 1/4x5	B&B	Cot.	Ti-6250.	WO.	34x5n	34x5n	Diamond T .. EL	5	Hi-200.	4 1/2x5 1/2	Cov.	Ti-6760	WO.	36x6	40x6d					
Acme.....	30 1/2-1	.....	Co-J.	3 1/4x5	B&B	Cot.	Ti-6352.	WO.	34x3 1/2	31x5	Diamond T .. S	5	Hi-B2.	4 1/2x5	B-L.	Ti-6760.	WO.	36x6	40x6d					
Acme.....	40 1/2-2	.....	Co-J.	3 1/4x5	B&B	Cot.	Ti-6160.	WO.	34x3 1/2	31x5	Dodge Brothers.	3 1/2	\$ 730.	Own.	3/2x5 1/2	Own.	Own.	SB..	32x4n	32x4n				
Acme.....	60 2 1/2-3	.....	Co-K.	4 1/2x5 1/2	B&B	Cot.	Ti-6560.	WO.	36x4	36x7	Doris.	K-1	2490	Own.	3 1/2x5 1/2	Own.	War..	Ti-5512.	IG..	33x5n	33x5n			
Acme.....	90 3 1/2-4	.....	Co-L.	4 1/2x5 1/2	B&B	Cot.	Ti-6660.	WO.	36x5	40x10	Doris.	K-4	3400	Own.	4 1/2x5 1/2	Own.	War..	Ti-6560.	WO.	36x4	36x7			
Acme.....	125 5 1/2-6	.....	Co-B5.	4 1/2x6	B&B	Cot.	Ti-6760.	WO.	36x6	40x12	Doris.	K-7	4400	Own.	4 1/2x5 1/2	Own.	War..	Ti-6660.	WO.	36x7	36x10			
Amer. La France.....	21 1/2-4	\$3950	Own.	4 1/2x6	Own.	Own.	DR.	36x4	36x7	Dort.	103	685b	Iy-K.	3 1/2x5	Del.	Own.	Fl-105..	SB..	31x4n	31x4n				
Amer. La France.....	31 1/2-4	4950	Own.	4 1/2x6	Own.	Own.	WO.	36x5	36x5	Duplex.	G	.....	Bu-WTU	4 1/2x5 1/2	B-L.	Ti-5511..	SB..	23x5	33x5n					
Amer. La France.....	5500	Own.	4 1/2x6	Own.	Own.	WO.	36x6	40x6	Duplex.	GH	.....	Bu-WTU	3 1/2x5 1/2	Cov.	Cov.	Sh-1591..	WO.	35x5	36x6					
Armleder.....	21 1/2-2	.....	Bu-GTU	4 1/2x5 1/2	Ful.	Ful.	Ti-6460.	WO.	34x3 1/2	31x6	Duplex.	A	.....	Hi-400.	4 1/2x5 1/2	Cov.	Cov.	Sh-103..	WO.	35x5	38x7n			
Armleder.....	H.W.B.	.....	Bu-HTU	4 1/2x5 1/2	B-L.	B-L.	Ti-6560.	WO.	36x4	36x4d	Duplex.	AC	21 1/2-3	Hi-100.	4 1/2x5 1/2	B-L.	Vu-4...	WO.	34x5	26x8				
Armleder.....	K.W.B.	.....	Co-C.	4 1/2x5 1/2	B-L.	B-L.	Ti-6560.	WO.	36x4	36x4d	Duplex.	E	31 1/2	Bu..	4 1/2x5 1/2	B-L.	Own...	IG..	36x8	36x8				
Armleder.....	K.W.C.	.....	Co-E.	4 1/2x5 1/2	B-L.	B-L.	Ti-6666.	WO.	36x5	36x5d	F. W. D.....	B	3	4200	Wi-A...	4 1/2x5 1/2	II-S.	Cot.	Own...	SP..	36x6	36x6		
Attibury.....	20 1/2-2	2475	Co-J.	4 1/2x5 1/2	Ful.	Ful.	Ti-6460.	WO.	34x4	31x6	Fageol.	1 1/2	3000	Wa-YA..	3 1/2x5 1/2	B-L.	Own.	Ti-6461..	WO.	34x3 1/2	34x6			
Attibury.....	22 1/2-3	3375b	Co-K.	4 1/2x5 1/2	B-L.	B-L.	Ti-6560.	WO.	36x4	36x4d	Fageol.	2 1/2	3900	Wa-CU..	4 1/2x5 1/2	B-L.	Own.	Ti-6560..	WO.	34x4	36x7			
Attibury.....	22D 1/2-3	4275b	Co-L.	4 1/2x5 1/2	B-L.	B-L.	Ti-6660.	WO.	36x5	40x6d	Fageol.	3	5000	Wa-DU..	4 1/2x6 1/2	B-L.	Own.	Ti-6666..	WO.	36x5	40x6d			
Attibury.....	8E 3-6	4975b	Co-B2.	4 1/2x6	B-L.	B-L.	Ti-6760.	WO.	36x6	40x7d	Fageol.	6	5700	Federal.	R2	Co-J.	3 1/2x5	B&B	Det.	Ti-6250..	WO.	33x5n	33x5n	
Autocar.....	21 1/2-2	2200	Own.	4 1/2x5 1/2	Own.	Own.	DR.	34x4	34x6	Federal.	S-23	.....	Federal.	S-23	4 1/2x5 1/2	B&B	Det.	Ti-6460..	WO.	36x3 1/2	36x5			
Autocar.....	27-3	3450	Own.	4 1/2x5 1/2	Own.	Own.	DR.	34x5	36x8	Federal.	U2	.....	Federal.	U2	4 1/2x5 1/2	B&B	Det.	Ti-6560..	WO.	36x4	36x8			
Autocar.....	26 1-6	4650	Own.	4 1/2x5 1/2	Own.	Own.	DR.	31x6	36x12	Federal.	W2	31 1/2-1	Co-L.	4 1/2x5 1/2	B&B	War..	Ti-6660..	WO.	36x5	40x5d				
Available.....	J1 1/2	2450	He-O.	4x5	B-L.	B-L.	Ti-6460.	WO.	36x3 1/2	30x5	Federal.	X2 5-6	.....	Co-B5.	4 1/2x6	B&B	War..	Ti-6760..	WO.	36x6	40x6d			
Available.....	H 3 1/2	3160	He-O.	4x5	B-L.	B-L.	Ti-6560.	WO.	36x4	36x8	Ford.....	TG 1	.....	Ford.	TD 1	33 1/2x4	Own.	Own.	WO.	30x3 1/2	32x4 1/2			
Available.....	H 3 1/2	4175	He-MU3	4 1/2x5 1/2	B-L.	B-L.	Ti-6666.	WO.	36x5	40x5d	Ford.	(37)	.....	(490b)	.....	.....	.....	.....	.....	.....	.....
Available.....	H 5	5375	He-T3.	5x6	B-L.	B-L.	Ti-6760.	WO.	36x6	40x12	G. M. C.....	K16	1	4200	Wi-A...	4 1/2x5 1/2	II-S.	Cot.	Own...	SP..	36x6	36x6		
Bessemer.....	G 1	1450	Co-N.	3 1/2x5	Ful.	Ful.	To-E.	IG.	35x5n	35x5n	G. M. C.....	K41	2	3000	Wa-YA..	3 1/2x5 1/2	B-L.	Own.	Ti-6560..	WO.	36x4	36x7		
Bessemer.....	H 2 1/2	1995	Co-N.	3 1/2x5	B&B	Bak.	LM-7150	DR.	36x3 1/2	36x5	G. M. C.....	K41	3	3900	Wa-CU..	4 1/2x5 1/2	B-L.	Own.	Ti-6560..	WO.	36x4	36x8		
Bessemer.....	J 2 1/2	2895	Co-C2.	4 1/2x5 1/2	B&B	B-L.	LM-7250	DR.	36x4	36x4d	G. M. C.....	K71	3 1/2	5000	Wa-DU..	4 1/2x6 1/2	B-L.	Own.	Ti-6666..	WO.	36x5	40x5d		
Bessemer.....	K 2 1/2	3195	Co-E7.	4 1/2x5 1/2	B-L.	B-L.	Ti-6660.	WO.	36x5	40x6d	G. M. C.....	K71	10	5700	Federal.	R2	Co-J.	3 1/2x5	B&B	Det.	Ti-6250..	WO.	33x5n	33x5n
Bethlehem.....	KN 1	1595	Own.	3 1/2x5	B&B	Det.	Ex-1000	SB..	35x5n	35x5n	G. M. C.....	K10	5	5700	Co-J.	4 1/2x5 1/2	B&B	Det.	Ti-6460..	WO.	36x3 1/2	36x5		
Bethlehem.....	GN 2	2495	Own.	4 1/2x5 1/2	B-L.	B-L.	Ti-6040.	DR.	34x4	34x6	G. M. C.....	K10	6	5700	Federal.	S-23	Co-K4.	4 1/2x5 1/2	B&B	Det.	Ti-6560..	WO.	36x4	36x8
Bethlehem.....	HN 3	3295	Own.	4 1/2x5 1/2	Ful.	Ful.	Ti-886.	DR.	36x4	36x8	G. M. C.....	K10	15	5700	Co-K4.	4 1/2x5 1/2	B&B	Det.	Ti-6660..	WO.	36x5	40x14		
Brockway.....	E 2 1/2	4890	Wi-SU.	4x5	B-L.	B-L.	Ti-5200.	SB..	33x5n	33x5n	G. M. C.....	K10	15	5700	Garford.	15	Garford.	25B	1/2	Garford.	25B	1/2	34x5n	34x5n
Brockway.....	S 1 1/2	550	Wi-SU.	4x5	B-L.	B-L.	Ti-6160.	WO.	36x4	36x6	G. M. C.....	K10	16	5700	Garford.	25B	1/2	Garford.	25B	1/2	34x5n	34x5n		
Brockway.....	K 2 1/2	2520	Co-K4.	4 1/2x5 1/2	B-L.	B-L.	Ti-6560.	WO.	36x4	36x8	G. M. C.....	K10	17	5700	Garford.	70	Garford.	80	1/2	Garford.	80	1/2	34x5n	34x5n
Brockway.....	R 3 1/2	3250	Co-L.	4 1/2x5 1/2	B-L.	B-L.	Ti-6666.	WO.	36x5	36x5d	G. M. C.....	K10	18	5700	Garford.	68D	Garford.	80	1/2	Garford.	68D	1/2	34x5n	34x5n
Brockway.....	T 5	4500	Co-B5.	4 1/2x6	B-L.	B-L.	Ti-6760.	WO.	36x6	40x7d	G. M. C.....	K10	19	5700	Garford.	150	Garford.	175	1/2	Garford.	175	1/2	34x5n	34x5n
Commerce.....	TR 2	.....	Co-N.	3 1/2x5	TD.	Own.	To-C130.	IG.	36x6n	38x7n	G. M. C.....	K10	20	5700	Garford.	25B	Garford.	25B	1/2	Garford.	25B	1/2	34x5n	34x5n
Chevrolet.....	Sup 1/2	395	Own.	3 1/2x4	Own.	Own.	DR.	30x3 1/2	30x3 1/2	G. M. C.....	K10	21	5700	Garford.	25B	Garford.	25B	1/2	Garford.	25B	1/2	34x5n	34x5n	
Chevrolet.....	Utl	550	Own.	3 1/2x4	Own.	Mun.	SB..	31x4	34x4	G. M. C.....	K10	22	5700	Garford.	25B	Garford.	25B	1/2	Garford.	25B	1/2	34x5n	34x5n	
Clinton.....	20 1-1/4	1980	Bu-WTU	3 1/2x5 1/2	B-L.	B-L.	Ti-6250.	WO.	34x3n	31x5	G. M. C.....	K10	23	5700	Garford.	25B	Garford.	25B	1/2	Garford.	25B	1/2	34x5n	34x5n
Clinton.....	45 1-1/4	2810	Bu-GTU	4 1/2x5 1/2	B-L.	B-L.	Ti-6460.	WO.	34x4	31x3 1/2	G. M. C.....	K10	24	5700	Garford.	25B	Garford.	25B	1/2	Garford.	25B	1/2	34x5n	34x5n
Clinton.....	65 2-3	3180	Bu-ETU	4 1/2x5 1/2	B-L.	B-L.	Ti-6560.	WO.	34x5	34x5d	G. M. C.....	K10	25	5700	Garford.	25B	Garford.	25B	1/2	Garford.	25B	1/2	34x5n	34x5n
Clinton.....	90 3 1/2-4	4160	Bu-YTU	4 1/2x6	B-L.	B-L.	Ti-6666.	WO.	36x6	36x6d	G. M. C.....	K10	26	5700	Garford.	25B	Garford.	25B	1/2	Garford.	25B	1/2	34x5n	34x5n
Clinton.....	120 5-7	4890	Bu-BTU	5x6	B-L.	B-L.	Ti-6760.	WO.	36x6	36x7d	G. M. C.....	K10	27	5700	Garford.	25B	Garford.	25B	1/2	Garford.	25B	1/2	34x5n	34x5n
Clydesdale.....	10A 1/2	1785	Co-N.	3 1/2x5	B-L.	B-L.	Ti-6250.	SB..	34x5n	34x5n	G. M. C.....	K10	28	5700	Garford.	25B	Garford.	25B	1/2	Garford.	25B	1/2	34x5n	34x5n
Clydesdale.....	6 3 1/2	2550	Co-K4.	4 1/2x5 1/2	B-L.	B-L.	Ti-6160.	WO.	36x4	36x7	G. M. C.....	K10	29	5700	Garford.	25B	Garford.	25B	1/2	Garford.	25B	1/2	34x5n	34x5n
Clydesdale.....	6 3 1/2	3303	Co-L4.	4 1/2x5 1/2	B-L.	B-L.	Ti-6560.	WO.	36x5	36x5d	G. M. C.....	K10	30	5700	Garford.	25B	Garford.	25B	1/2	Garford.	25B	1/2	34x5n	34x5n
Clydesdale.....	4 5	4200	Co-B5.	4 1/2x6	B-L.	B-L.	Ti-6666.	WO.	36x6	40x6d	G. M. C.....	K10	31	5700	Garford.	25B	Garford.	25B	1/2	Garford.	25B	1/2		

Current Motor Truck Specifications—Continued

(This list comprises trucks distributed on a national basis)

MAKE AND MODEL	Tons Capacity	ENGINE		REAR AXLE		TIRES		MAKE AND MODEL	Tons Capacity	ENGINE		REAR AXLE		TIRES							
		Price	Make & Model	Bore & Stroke ⁵	Gearset Make	Clutch Make	Front			Price	Make & Model	Bore & Stroke ⁵	Gearset Make	Clutch Make	Front	Rear					
Kissel	4	\$1625	Own.	41 ¹ / ₂ x5 ¹ / ₂	War.	War.	30x5	36x12	Schacht	5	\$4600	Wi-VAU	41 ¹ / ₂ x6	B&B	Own.	WO.	36x5	40x7d			
Larrabee	X2 1 ¹ / ₂ -1 ¹ / ₂	1785	Co-8lt.	3 ¹ / ₂ x4 ¹ / ₂	B-L.	B-L.	34x5n	34x5n	Selden	30C 1 ¹ / ₂	2375	CJ-4	33x5	B-L.	Ti.	WO.	34x3 ¹ / ₂	34x5k			
Larrabee	J4 1 ¹ / ₂ -2 ¹ / ₂	2100	Co-J4.	3 ¹ / ₂ x4 ¹ / ₂	B-L.	B-L.	31x5	34x5k	Selden	50B 2 ¹ / ₂	3250	Co-K4.	41 ¹ / ₂ x5 ¹ / ₂	B-L.	Ti.	WO.	36x4 ¹ / ₂	36x7k			
Larrabee	K5 2 ¹ / ₂ -3 ¹ / ₂	3550	Co-L4.	41 ¹ / ₂ x5 ¹ / ₂	B-L.	B-L.	Sh-22.	30x6	Selden	53B 3 ¹ / ₂	3550	Co-L4.	41 ¹ / ₂ x5 ¹ / ₂	B-L.	Ti.	WO.	36x4 ¹ / ₂	36x7k			
Larrabee	L4 3 ¹ / ₂ -4 ¹ / ₂	4100	Co-L4.	41 ¹ / ₂ x5 ¹ / ₂	B-L.	B-L.	Sh-31.	30x5	36x10	Selden	70B 3 ¹ / ₂	4175	Co-L4.	41 ¹ / ₂ x5 ¹ / ₂	B-L.	Ti.	WO.	36x5 ¹ / ₂	36x10k		
Macar.	EX 1 ¹ / ₂	.....	Wi-SU.	4x6	B-L.	B-L.	Sh-152 ^e	SB.	34x5n	Selden	73 3 ¹ / ₂	4175	Co-B5.	41 ¹ / ₂ x6	B-L.	Ti.	WO.	36x5 ¹ / ₂	36x10k	
Macar.	L-1 1 ¹ / ₂	Wi-TAU	4x6	B-L.	B-L.	Ti-6480.	WO.	36x4	36x6	Selden	90A 5	4950	Co-B5.	41 ¹ / ₂ x6	Del.	B-L.	Ti.	WO.	36x6k	40x12
Macar.	HT 2	.....	Wi-TAU	4x6	B-L.	B-L.	Ti-6560.	WO.	36x4	36x4d	Schacht	25 1 ¹ / ₂	4900	Wi-VAU	41 ¹ / ₂ x6	B&B	Own.	WO.	34x5n	34x5n
Macar.	H-13	.....	Wi-UAU	41 ¹ / ₂ x6	B-L.	B-L.	Ti-6560.	WO.	36x4	36x5d	Schacht	30C 1 ¹ / ₂	2375	CJ-4	33x5	B-L.	Ti.	WO.	34x3 ¹ / ₂	34x5k
Macar.	M-2 ¹ / ₂	.....	Wi-VAU	41 ¹ / ₂ x6	B-L.	B-L.	Ti-6666.	WO.	36x5	36x6d	Schacht	50B 2 ¹ / ₂	3250	Co-K4.	41 ¹ / ₂ x5 ¹ / ₂	B-L.	Ti.	WO.	36x4 ¹ / ₂	36x7k
Macar.	G-1 ¹ / ₂	.....	Wi-RBU	5x6	B-L.	B-L.	Ti-6760.	WO.	36x6	40x6d	Schacht	53B 3 ¹ / ₂	3550	Co-L4.	41 ¹ / ₂ x5 ¹ / ₂	B-L.	Ti.	WO.	36x5 ¹ / ₂	36x7k
MacDonald	O 3-5	5500b	Bu-WTU	3 ¹ / ₂ x5 ¹ / ₂	B-L.	B-L.	**Own.	IG.	36x6	36x10	Schacht	70B 3 ¹ / ₂	4175	Co-L4.	41 ¹ / ₂ x5 ¹ / ₂	B-L.	Ti.	WO.	36x5 ¹ / ₂	36x10k	
MacDonald	A 7 ¹ / ₂ -8 ¹ / ₂	8030b	Bu-YTU	41 ¹ / ₂ x6	B-L.	B-L.	**Own.	IG.	40x7	40x14	Schacht	73 3 ¹ / ₂	4175	Co-B5.	41 ¹ / ₂ x6	B-L.	Ti.	WO.	36x5 ¹ / ₂	36x10k	
Mack.	AB 1 ¹ / ₂ -2 ¹ / ₂	3000	Own.	4x5	Own.	Own.	Ch.	36x4	36x3 ¹ / ₂	Schacht	90A 5	4950	Co-B5.	41 ¹ / ₂ x6	Del.	B-L.	Ti.	WO.	36x6k	40x12	
Mack.	AB 1 ¹ / ₂ -2 ¹ / ₂	3150	Own.	41 ¹ / ₂ x5	Own.	Own.	Drt.	36x4	36x3 ¹ / ₂	Schacht	25 1 ¹ / ₂	4900	Wi-VAU	41 ¹ / ₂ x6	B&B	Own.	WO.	34x5n	34x5n		
Mack.	AB 2	3300	Own.	41 ¹ / ₂ x5	Own.	Own.	Ch.	36x4	36x4d	Schacht	30C 1 ¹ / ₂	2375	CJ-4	33x5	B-L.	Ti.	WO.	34x3 ¹ / ₂	34x5k		
Mack.	AB 2	3750	Own.	41 ¹ / ₂ x5	Own.	Own.	Drt.	36x4	36x4d	Schacht	50B 2 ¹ / ₂	3250	Co-K4.	41 ¹ / ₂ x5 ¹ / ₂	B-L.	Ti.	WO.	36x4 ¹ / ₂	36x7k		
Mack.	AB 2	3100	Own.	41 ¹ / ₂ x5	Own.	Own.	Ch.	36x4	36x4d	Schacht	53B 3 ¹ / ₂	3550	Co-L4.	41 ¹ / ₂ x5 ¹ / ₂	B-L.	Ti.	WO.	36x5 ¹ / ₂	36x7k		
Mack.	AB 2	3850	Own.	41 ¹ / ₂ x5	Own.	Own.	Drt.	36x4	36x4d	Schacht	70B 3 ¹ / ₂	4175	Co-B5.	41 ¹ / ₂ x6	B-L.	Ti.	WO.	36x5 ¹ / ₂	36x7k		
Mack.	AC 3	4950	Own.	5x6	Own.	Own.	Ch.	36x4	40x5d	Schacht	73 3 ¹ / ₂	4175	Co-B5.	41 ¹ / ₂ x6	B-L.	Ti.	WO.	36x5 ¹ / ₂	36x7k		
Mack.	AC 5	5500	Own.	5x6	Own.	Own.	Ch.	36x4	40x6d	Schacht	90A 5	4950	Co-B5.	41 ¹ / ₂ x6	Del.	B-L.	Ti.	WO.	36x6k	40x14	
Mack.	AC 6	5750	Own.	5x6	Own.	Own.	Ch.	36x4	40x12	Schacht	25 1 ¹ / ₂	4900	Wi-VAU	41 ¹ / ₂ x6	B&B	Own.	WO.	34x5n	34x5n		
Mack.	AC 7	6000	Own.	5x6	Own.	Own.	Ch.	36x7	40x7d	Schacht	30C 1 ¹ / ₂	2375	CJ-4	33x5	B-L.	Ti.	WO.	34x3 ¹ / ₂	34x5k		
Mack.	AC 7	3100	Own.	41 ¹ / ₂ x5	Own.	Own.	Ch.	36x4	36x4d	Schacht	50B 2 ¹ / ₂	3250	Co-K4.	41 ¹ / ₂ x5 ¹ / ₂	B-L.	Ti.	WO.	36x4 ¹ / ₂	36x7k		
Mack.	AC 7	4950	Own.	5x6	Own.	Own.	Ch.	36x5	40x5d	Schacht	53B 3 ¹ / ₂	3550	Co-L4.	41 ¹ / ₂ x5 ¹ / ₂	B-L.	Ti.	WO.	36x5 ¹ / ₂	36x7k		
Mack.	AC 10	5500	Own.	5x6	Own.	Own.	Ch.	36x6	40x6d	Schacht	70B 3 ¹ / ₂	4175	Co-B5.	41 ¹ / ₂ x6	B-L.	Ti.	WO.	36x5 ¹ / ₂	36x7k		
Mack.	AC 13	5750	Own.	5x6	Own.	Own.	Ch.	36x6	40x12	Schacht	73 3 ¹ / ₂	4175	Co-B5.	41 ¹ / ₂ x6	B-L.	Ti.	WO.	36x5 ¹ / ₂	36x7k		
Mack.	AC 15	6000	Own.	5x6	Own.	Own.	Ch.	36x7	40x7d	Schacht	90A 5	4950	Co-B5.	41 ¹ / ₂ x6	Del.	B-L.	Ti.	WO.	36x6k	40x14	
Mason.	He.	1295	He.	4x5	He.	He.	SB.	34x5n	34x5n	Schacht	25 1 ¹ / ₂	4900	Wi-VAU	41 ¹ / ₂ x6	B&B	Own.	WO.	34x5n	34x5n		
Master.	II 1 ¹ / ₂	1295	Bu-WTU	3 ¹ / ₂ x5 ¹ / ₂	Ful.	Ful.	Ti-551.	SB.	33x5n	33x5n	Schacht	30C 1 ¹ / ₂	2375	CJ-4	33x5	B-L.	Ti.	WO.	34x3 ¹ / ₂	34x5k	
Master.	II 1 ¹ / ₂	2100	Bu-UAU	41 ¹ / ₂ x5	Ful.	Ful.	Ti-5160.	WO.	34x4	34x6	Schacht	50B 2 ¹ / ₂	3250	Co-K4.	41 ¹ / ₂ x5 ¹ / ₂	B-L.	Ti.	WO.	36x4 ¹ / ₂	36x7k	
Master.	II 1 ¹ / ₂	2100	Bu-ETU	41 ¹ / ₂ x5	Ful.	Ful.	Ti-6560.	WO.	34x4	36x8	Schacht	53B 3 ¹ / ₂	3550	Co-L4.	41 ¹ / ₂ x5 ¹ / ₂	B-L.	Ti.	WO.	36x5 ¹ / ₂	36x7k	
Master.	II 1 ¹ / ₂	2100	Bu-YTU	41 ¹ / ₂ x6	B-L.	B-L.	Ti-6760.	WO.	36x5	40x12	Schacht	70B 3 ¹ / ₂	4175	Co-B5.	41 ¹ / ₂ x6	B-L.	Ti.	WO.	36x5 ¹ / ₂	36x7k	
Master.	II 1 ¹ / ₂	2100	Bu-ATU	41 ¹ / ₂ x6	B-L.	B-L.	Ti-6760.	WO.	36x6	40x14	Schacht	73 3 ¹ / ₂	4175	Co-B5.	41 ¹ / ₂ x6	B-L.	Ti.	WO.	36x5 ¹ / ₂	36x7k	
Maxwell.	1 ¹ / ₂	1097	Own.	3 ¹ / ₂ x4 ¹ / ₂	Own.	Own.	Ch.	35x5n	35x5n	Schacht	90A 5	4950	Co-B5.	41 ¹ / ₂ x6	Del.	B-L.	Ti.	WO.	34x5n	34x5n	
Menominee.	B 1	.....	Wi-SU.	1x5	B&B.	B&B.	Co-5200.	SB.	35x5n	35x5n	Schacht	25 1 ¹ / ₂	4900	Wi-VAU	41 ¹ / ₂ x6	B&B	Own.	WO.	34x3 ¹ / ₂	34x5k
Menominee.	HT 1 ¹ / ₂	2000	Wi-CAU	31 ¹ / ₂ x5	Ful.	Ful.	Co-800G.	SB.	34x3 ¹ / ₂	36x5k	Schacht	30C 1 ¹ / ₂	2375	CJ-4	33x5	B-L.	Ti.	WO.	34x3 ¹ / ₂	34x5k	
Menominee.	H 1 ¹ / ₂	2175	Wi-EAU	45x5	Ful.	Ful.	Co-800H.	WO.	36x3 ¹ / ₂	36x5k	Schacht	50B 2 ¹ / ₂	3250	Co-K4.	41 ¹ / ₂ x5 ¹ / ₂	B-L.	Ti.	WO.	36x3 ¹ / ₂	36x5k	
Menominee.	D 2 ¹ / ₂ -2 ¹ / ₂	2375	Wi-TAU	41 ¹ / ₂ x5	Ful.	Ful.	Co-800J.	WO.	36x4	36x8	Schacht	53B 3 ¹ / ₂	3550	Co-L4.	41 ¹ / ₂ x5 ¹ / ₂	B-L.	Ti.	WO.	36x5 ¹ / ₂	36x7k	
Menominee.	J 5	4850	Wi-RAU	41 ¹ / ₂ x6	B&B.	B&B.	Ti-6760.	WO.	36x6	40x12	Schacht	70B 3 ¹ / ₂	4175	Co-B5.	41 ¹ / ₂ x6	B-L.	Ti.	WO.	36x5 ¹ / ₂	36x7k	
Moline.	10	1695	Own.	31 ¹ / ₂ x5	B&B.	B&B.	Ti-6760.	WO.	36x6	40x14	Schacht	73 3 ¹ / ₂	4175	Co-B5.	41 ¹ / ₂ x6	B-L.	Ti.	WO.	36x5 ¹ / ₂	36x7k	
Nash.	2018	1595	Own.	41 ¹ / ₂ x5	B-L.	B-L.	Ti-680J.	WO.	36x3 ¹ / ₂	36x8	Schacht	90A 5	4950	Co-B5.	41 ¹ / ₂ x6	Del.	B-L.	Ti.	WO.	34x5n	34x5n
Nash.	4017F 2 ¹ / ₂ -2 ¹ / ₂	2750	Bu-HU	41 ¹ / ₂ x5	Ful.	Ful.	Ti-680J.	WO.	36x3 ¹ / ₂	36x10	Schacht	25 1 ¹ / ₂	4900	Wi-VAU	41 ¹ / ₂ x6	B&B	Own.	WO.	36x3 ¹ / ₂	36x5k	
Nash.	3018	2150	Own.	31 ¹ / ₂ x5	B-L.	B-L.	Ti-6821.	WO.	34x4	34x7	Schacht	30C 1 ¹ / ₂ </td									

Current Motor Truck Specifications—Continued

(This list comprises trucks distributed on a national basis)

CANADIAN

MAKE AND MODEL	Tons Capacity	Price	ENGINE		REAR AXLE	TIRES		MAKE AND MODEL	Tons Capacity	Price	ENGINE		REAR AXLE	TIRES					
			Make & Model	Bore & Stroke		Clutch Make	Gearset Make	Final Drive	Front	Rear	Make & Model	Bore & Stroke		Final Drive	Front	Rear			
Goffredson... 20 1/4-1	\$2275	Bu-WTU	3 1/4 x 5 1/8	B-L.	Ti-6250.	WO.	34x5n	34x5n	National... FA 1	\$2450	Wa-BUX	3 1/4 x 5 1/4	B-L.	Ti-6352.	WO.	35x5n	35x5n		
Goffredson... 40 1 1/2-2	3290	Bu-GTU	4 1/4 x 5	B-L.	Ti-6160.	WO.	36x5n	38x7n	National... GA 1 ^{1/2}	2750	Wa-BUX	3 1/4 x 5 1/4	B-L.	Ti-6460.	WO.	34x4k	34x6k		
Goffredson... 50 2 1/2-3	3775	Bu-Etu.	4 1/4 x 5 1/2	B-L.	Ti-6560.	WO.	36x1	36x8	National... HD 2 ^{1/2}	3750	Wa-CU.	4 1/4 x 5 1/4	H-S.	Ti-6560.	WO.	36x5	36x10		
Goffredson... 80 4 1/2-5	4775	Bu-YTU	4 1/2 x 6	B-L.	Ti-6560.	WO.	34x5	36x12	National... NB 3 ^{1/2}	4750	Wa-DU.	4 1/4 x 6 1/4	H-S.	Ti-6666.	WO.	36x6	36x12		
Goffredson... 100 5	5800	Bu-BTU	5 1/2 x 6	B-L.	Ti-6760.	WO.	36x6	10x11	National... OA 5 ^{1/2}	6150	Wa-EU.	5 x 6	B-L.	Ti-6760.	WO.	34x5n	40x14		
Mapleleaf... 11 1/2	3000	Hi-300.	3 1/4 x 5 1/4	Ful.	Ful.	Sh-1501.	WO.	31x5n	36x6n	Veteran... M 1 ^{1/2}	2699	Bu-CTU	3 1/4 x 5 1/4	B&B.	Cot.	Sh-1501.	WO.	34x5n	34x5n
Mapleleaf... AA 2	3600	Hi-400.	4 x 5 1/4	Ful.	Ful.	Sh-103.	WO.	36x1	36x7	Veteran... P 2 ^{1/2}	3699	Bu-HTU	4 1/4 x 5 1/2	B&B.	Cot.	Sh-21.	WO.	36x4	36x7
Mapleleaf... BB 3	4050	Hi-500.	4 1/4 x 5 1/2	Ful.	Ful.	Sh-21.	WO.	36x4	36x4d	Veteran... R 3 ^{1/2}	4200	Bu-HTU	4 1/4 x 5 1/2	B&B.	Cot.	Sh-21.	WO.	36x4	36x7
Mapleleaf... CC 4	4800	Hi-200.	4 1/2 x 5 1/2	Ful.	Ful.	Sh-31.	WO.	36x5	36x5d	Veteran... S 4 ^{1/2}	5395	Bu-YTU	4 1/2 x 6	B&B.	Cot.	Sh-31.	WO.	36x5	36x10
Mapleleaf... DD 5	5625	Hi-1600.	4 1/2 x 5 1/2	Ful.	Ful.	Sh-51.	WO.	36x6	36x6d										

Current Tractor Specifications

MAKE & MODEL	Drawbar-Pully Rating	Recommended No. of 14 Ins. Plows	ENGINE		MAKE & MODEL	Drawbar-Pully Rating	Recommended No. of 14 Ins. Plows	ENGINE		MAKE & MODEL	Drawbar-Pully Rating	Recommended No. of 14 Ins. Plows	ENGINE			
			Make	No. of Cyls.		Weight (Lbs.)	Traction Members, Dimension, Diameter & Face (Ins.)	Make	No. of Cyls.		Weight (Lbs.)	Traction Members, Dimension, Diameter & Face (Ins.)	Make	No. of Cyls.		
Allis-Chalmers... 6-12 1	\$325	Le.R.	4-3 1/2 x 5	2500	48x 6	Gray... EU 22-40	4	2385	Wau.	4-5 x 6	6900	†	Rumely OilPull... E 30-60	8-10	Own.	
Allis-Chalmers... 15-25 3	1285	Mid.	4-4 x 5	4700	46x12	Hart-Parr... 20	-20	2	Own.	2-5 1/2 x 6	4250	46x10	Russell... 15-30	3-4	Cli.	
Allis-Chalmers... 20-35 4	1855	Own.	4-4 x 6	6150	50x10	Hart-Parr... 30	-30	3	Own.	2-6 1/2 x 7	5220	52x10	Russell... 20-40	2-3	Cli.	
Allwork... D 20-38 4-5	1095	Own.	1-5 x 7	6500	48x14	Hart-Parr... (Road)	-30	3	Own.	2-6 1/2 x 7	7560	52x18	Townsend... 15-30	3-4	Own.	
Allwork... G 14-28 3	1195	Own.	4-4 x 6	4800	48x12	Hart-Parr... 49	-40	4	Mid.	4-6 x 6	7510	32x18	Townsend... 25-50	4-8	Own.	
Allwork... H 16-30 3	1295	Own.	1-5 x 6	5200	48x12	Heider... D 9-16	2	...	Wau.	4-4 x 6	4000	51x 8	Traylor... 6-12	1	Le.R.	
Aultman-Taylor... 15-30 3-4 1	1900	Chl.	1-5 x 6	7800	70x12	Heider... C 12-20	3	...	Wau.	4-4 x 6	6000	57x10	Twin City... 12-20	3	Le.R.	
Aultman-Taylor... 22-45 4-6 3	3100	Own.	4-5 x 8	12500	70x20	Heider... M 5-10	10-12	...	Le.R.	4-3 1/2 x 6	5000	40x14	Twin City... 20-35	5	Le.R.	
Aultman-Taylor... 30-60 8-10 4	1400	Own.	1-7 x 9	22500	90x24	Huber... (Light 4) 12-25	3	985	Wau.	4-4 x 5	5000	60x10	Uncle Sam... C-20	2-3	Le.R.	
Avery... 15 3-4 1	...	...	4-5 x 6	4750	50x12	Huber... (Super 4) 15-30	3	...	Mid.	4-4 x 6	6000	60x10	Uncle Sam... B-10	3-4	Le.R.
Avery... 20-35 20-35 4-5 1	...	...	4-4 x 7	7500	60x16	Lauzon... S 12-25	3	...	Mid.	4-4 x 5	4200	...	Uncle Sam... B-10	3-4	Le.R.
Avery... 25-50 25-50 5-6 1	...	...	4-6 x 7	12500	60x20	Lauzon... T 15-30	4	...	Bea.	4-4 x 6	6200	...	Uncle Sam... B-10	3-4	Le.R.
Avery... 45-65 45-65 8-10 1	...	...	4-7 x 8	22000	87x21	Leader... B 12-18	2	375	Own.	2-6 x 8	4800	50x12	Uncle Sam... B-10	3-4	Le.R.
Avery... Tr. Runner... 3 1	...	...	4-5 x 5	5000	8x 8	Leader... N 16-32	3-4	1275	Cli.	4-5 x 6	5800	52x12	Uncle Sam... B-10	3-4	Le.R.
Avery... RoadRazer... 60 10-60 9 1	...	...	6-3 x 4	4600	42x 6	Lincoln... A 15-30	3	1600	Bud.	4-4 x 6	5000	40x14	Uncle Sam... B-10	3-4	Le.R.
Bates (St. Mule) H 15-25 3 1	Mid.	4-4 x 5	3600	48x10	Little Giant... B 16-22	4	...	Own.	4-4 x 5	5200	51x14	Uncle Sam... B-10	3-4	Le.R.
Bates (St. Mule) H 18-25 3 1	Mid.	4-4 x 5	4850	56x10	Little Giant... A 26-35	6	...	Own.	5-1 x 6	8700	66x20	Uncle Sam... B-10	3-4	Le.R.
Bates (St. Mule) G 25-35 4 1	Mid.	4-4 x 6	6500	56x10	Lombard... 100	12-16	...	Own.	6-5 x 7	19000	51x12	Uncle Sam... B-10	3-4	Le.R.
Bates (St. Mule) G 30-40 4 1	Mid.	4-4 x 6	8000	61x12	Lombard... 125	12-25	...	Mid.	4-4 x 5	4200	...	Uncle Sam... B-10	3-4	Le.R.
Boat... B 25-35 4 1	1250	Ste.	4-4 x 6	6000	61x12	McCor'k-Deering... 10-20	2	850	Own.	4-4 x 5	3700	42x12	Uncle Sam... B-10	3-4	Le.R.	
Best... 30 20-30 4 1	...	...	4-4 x 6	8100	68x11	McCor'k-Deering... 15-30	3	1250	Own.	4-4 x 5	5750	50x12	Uncle Sam... B-10	3-4	Le.R.
Best... 60 10-60 9 1	...	...	4-6 x 8	1850	89x20	Minneapolis... 12-25	3	...	Own.	4-4 x 5	6000	56x12	Uncle Sam... B-10	3-4	Le.R.
Bryan... Steam 15-30 3 1	2385	Own.	2-4 x 5	5500	52x12	Minneapolis... 17-30	3-4	...	Own.	4-4 x 5	6700	56x12	Uncle Sam... B-10	3-4	Le.R.	
Case... 12-20 12-20 3 1	895	Own.	4-4 x 5	4230	42x12	Monarch... E 25-40	4	3000	Bea.	4-4 x 6	12000	67x12	Uncle Sam... B-10	3-4	Le.R.	
Case... 15-27 15-27 3-4 1	1350	Own.	4-4 x 6	6600	52x12	Monarch... D 35-60	6	...	Own.	4-4 x 7	15000	89x12	Uncle Sam... B-10	3-4	Le.R.	
Case... 22-40 22-40 4-5 1	2650	Own.	4-5 x 6	10700	56x10	Minneapolis... 35-70	8-10	...	Own.	4-7 x 9	22500	85x30	Uncle Sam... B-10	3-4	Le.R.	
Case... 40-72 40-72 8-10 4	9000	Own.	4-7 x 8	21200	72x20	Moline (Un.)... D 9-18	2-3	725	Own.	4-3 x 5	3380	52x 8	Uncle Sam... B-10	3-4	Le.R.	
Caterpillar... 2 Ton 15 3 1	...	...	4-4 x 5	4000	4000	Moline (Orc.)... D 9-18	2-3	725	Own.	4-3 x 5	3349	44x 8	Uncle Sam... B-10	3-4	Le.R.
Caterpillar... 5 Ton 25 4 1	...	...	4-4 x 6	9400	*	Monarch... C 20-30	4	3000	Bea.	4-4 x 6	8700	66x12	Uncle Sam... B-10	3-4	Le.R.
Caterpillar... 10 Ton 10 6 1	...	...	4-6 x 7	20000	*	Monarch... E 25-40	5	...	Own.	4-4 x 7	12000	67x12	Uncle Sam... B-10	3-4	Le.R.
Cletrac... F 9-16 2 1	815	Own.	4-3 x 4	1930	*42x 5	Nichols-Shepard... 20-42	4-6	2600	Own.	2-8 x 10	13500	61x20	Uncle Sam... B-10	3-4	Le.R.	
Cletrac... W 12-20 2 1	1345	Own.	4-4 x 5	3455	48x 8	Nichols-Shepard... 25-50	6-8	3320	Own.	2-9 x 12	20500	69x28	Uncle Sam... B-10	3-4	Le.R.	
Eagle... F 12-22 3 1	...	...	2-7 x 8	5500	48x12	Nichols-Shepard... 35-70	8-12	10300	Own.	2-10 x 14	30000	73x32	Uncle Sam... B-10	3-4	Le.R.
Eagle... H 16-30 3 1	...	...	2-8 x 8	7100	48x12	Pioneer... G 18-36 4 1	...	...	Own.	4-5 x 6	6500	60x18	Pioneer... G 18-36 4 1	...	Le.R.
E-B... AA 12-20 3 1	...	...	4-4 x 5	4550	54x12	Pioneer... G 40-75 10 1	...	...	Own.	4-5 x 6	21000	96x21	Pioneer... G 40-75 10 1	...	Le.R.
E-B... Q 12-20 40 1	...	...	4-4 x 5	6500	60x12	Rumely OilPull... K 12-20 3	2-3	...	Own.	2-6 x 8	6638	51x12	Rumely OilPull... K 12-20 3	2-3	Le.R.
E-B... Q 12-20 40 1	...	...	4-5 x 7	9400	72x16	Rumely OilPull... H 16-30 4 1	...	...	Own.	2-7 x 8	5095	56x16	Rumely OilPull... H 16-30 4 1	...	Le.R.
E-B... Q 16-32 4 1	...	...	4-5 x 7	3600	48x 8	Rumely OilPull... K 20-40 6 1	...	...	Own.	2-8 x 10	12988	64x20	Rumely OilPull... K 20-40 6 1	...	Le.R.
Pagoon... 19-12 2 1	1200	Lye.	4-3 x 5	3600	48x 8	Stearns... Westing.	...	...	None.	None.	...	...	Stearns... Westing.	...	Le.R.
Fordson... -18 1 2 1	4200	Own.	4-4 x 5	2562	42x12	Stearns... Westing.	...	...	None.	None.	...	...	Stearns... Westing.	...	Le.R.
Frick... A 12-20 2 1	1000	Erd.	4-4 x 6	5800	60x10	Stearns... Westing.	...	...	None.	None.	...	...	Stearns... Westing.	...	Le.R.
Frick... C 15-28 3 1	1630	Bev.	4-4 x 6	6730	60x12	Stearns... Westing.	...	...						

Current Passenger Car Specifications

(This list comprises cars distributed on a national basis)

PRICES										NAME AND MODEL	ENGINE			ELECTRICAL SYSTEM		Clutch Type and Make	Gearset Make	Universal Type and Make	REAR AXLE		
OPEN MODELS			CLOSED MODELS			Wheel Base (Ins.)	Tire Size (Ins.)††	Make and Model	No. of Cyl., Bore and Stroke	Horse Power Rating (N.A.A.C.)	Carburetor Make	Generator and Starter Make	Ignition Make	Type and Make	Gear Ratio††						
\$1950	\$1695	\$1760	\$1850d	d2195t	\$2350	\$2550d	127	33x4½	American.....D-66	H-S.....91	6-3½x5	29.40	Strom.	G-D..A-K..	s-p B&B..	War...West..	m Hart	F Salis	5.10	R1-R2	
1195	1195	1445c	1445c	12125	1495	1495	115	32x4*	Anderson.....41	Cont....7 U	6-3½x4½	23.44	Zenith	West..	s-p B&B..	Durston	f Good	½F Salis	5.75	R1-T1†	
1595	1595	1595	1595	1595	1695	1695	122	32x4*	Anderson.....50	Cont...8 R	6-3½x4½	27.34	Zenith	Remy..	s-p B&B..	Durston	f Good	¾F Salis	4.50	R1-T1†	
1395	1395	1660d	1660d	1995	3385	3385	129	32x4*	Apperson.....6	Falls T8000	6-3½x4½	23.44	Strom.	Remy..	s-p Rock..	Mech..	m Thie.	½F Col	5.10	R1-R2†	
2485	2485	1365d	1365d	1695d	1595	1845d	130	33x5	Apperson.....8-23-S	Own...	8-3½x5	33.80	Johnson	Bijur..	s-p B&B..	Warner	m Univ.	½F Own	4.25	R1-R2†	
1095	1095	d1295p	1295p	1295p	1295	1295	114	31x4*	Auburn.....6-43	Cont....7 U	6-3½x4½	23.44	Strom.	Remy..	s-p B&B..	Warner	m Thie.	½F Col	4.63	R1-T1†	
1695	1695	1935d	1935d	2245t	2145	2145	122	32x4*	Auburn.....6-63	Own...	6-3½x5	25.35	Strom.	Remy..	s-p B&B..	Warner	m Thie.	½F Col	4.65	R1-T1†	
1395	1395	1495d	1495d	1850	1850	1850	118	32x4	Barley.....6-50	H-S...40	6-3½x5	25.35	Strom.	Deleo..	s-p B&B..	Fuller..	f M&E.	¾F Col	5.10	F-L-R2	
935	965	800g	1395c	1495	109	109	109	31x4	Buick.....1924	Own...	4-3½x4½	18.23	Marvel.	Deleo..	m-d Own..	Own...	m Own.	¾F Own	4.66	F-L-R2	
1275	1295	1135g	1995c	1695	2095	2095	120	32x4	Buick.....1924	Own...	6-3½x4½	27.34	Marvel.	Deleo..	m-d Own..	Own...	m Own.	F Own	4.10	F-L-R2	
1385g	1385g	1565	[1675a]	1945c	2285	2285	128	32x4½	Buick.....1924	Own...	6-3½x4½	27.34	Marvel.	Deleo..	m-d Own..	Own...	m Own.	F Own	4.70	F-L-R2	
3085	3085	3085	[1725d]	2480c	2795t	2795t	132	33x5	Cadillac.....V-63	Own...	8-3½x5	31.25	Own...	Deleo..	m-d Own..	Own...	m Spicer	F Tim	4.50	F-L-R2	
1750	1790	2230d	2480c	2575	3235	3235	122	32x4½	Case.....X	Cont...8 R	6-3½x4½	27.34	Schebler	Delco..	m-d Own..	Own...	f Sned.	½F Col	4.90	R1-R2	
1185	1185	1335d	1335d	1535	117	117	117	32x4	Case.....Y	Cont...8 T	6-3½x4½	31.54	Rayfield	Delco..	s-p B&B..	Own...	f Sned.	¾F Col	4.90	R1-R2	
1295	1295	1785c	[1895d]	1745	2385	2385	122	33x4½	Chalmers.....V	Own...	6-3½x4½	25.35	Strom.	A-L..	s-p Mech..	Warner	m Mech.	½F Tim	5.13	R1-R2†	
1595	1485	1635	1785c	[1895d]	1745	2385	123	32x4*	Chalmers.....V	Own...	6-3½x5	29.40	Strom.	A-L..	s-p Mech..	Warner	m Own.	F Own	4.45	R1-T1†	
490	495	395g	610	795	725c	725c	103	30x3½	Chevrolet...Superior	Own...	4-3½x4	21.76	Zenith...Holley	Remy..	e Own..	Own...	m Own.	½F Own	3.77	R1-R2	
1525	1335	1395d	d1795t	1625	1895d	1895d	29x4½	Chrysler.....Six	Own...	6-3½x4½	21.60	Ball&B.	Remy..	m-d Own..	Own...	m Detr.	½F Own	4.60	F-L-T1		
1055	1045	1145d	1215	1295	1495d	1495d	31x4*	Cleveland.....42	Own...	6-3½x4½	25.50	Strom.	Bosch..	s-p B&B..	Own...	m Mech.	½F Own	4.90	R1-T1		
2175	2175	2175	2475	2750c	3075	3075	127½	33x5*	Cole.....Master	Nort...311	8-3½x4½	39.20	Johnson	Delco..	m-d Nort..	Nort...	m Spicer	F Col.	4.70	R1-R2	
1475	1475	1995	1995	1995	115	115	32x4*	Columbia...Big Six	Cont...8 R	6-3½x4½	27.34	Strom.	A-L..	s-p B&B..	Durston	m Spicer	½F Tim	4.75	R1-R2†		
995	995	1195d	1395	1495	1650d	1650d	31x4*	Columbia...Light Six	Cont...7 U	6-3½x4½	23.44	Strom.	A-L..	s-p B&B..	Durston	m Spicer	½F Tim	4.80	R1-T1†		
1395p	1295	1595e	1495	2195p	1895t	1895t	116	32x4	Courier.....	Falls...8000	6-3½x4½	23.44	Strom.	West..	A-K..	s-p B&B..	Muncie..	f Flex..	¾F Col	5.10	R1-R2
3100	310	3500e	.....	4500	138	138	33x4½	Crawford...23-6-70	Cont...6 T	6-3½x5	31.54	Zenith	West..	Bosch..	m-d B-L..	B-L..	m Spicer	½F Tim	4.77	R1-R2
5800	6300	6300	.....	4500	138	138	33x5	Crawford-Dagmar...6-70	Cont...6 T	6-3½x5	31.54	Zenith	West..	Bosch..	m-d B-L..	B-L..	m Spicer	½F Tim	4.77	R1-R2
.....	.....	.....	.....	7650	132	132	33x5	Cunningham...V4	Own...	8-3½x5	45.00	Strom.	Delco..	m-d Own..	Own...	f Sneed.	F Tim	4.23	R1-R2	
1295	1495	1495e	1495e	1595	1795	1795	115	31x4*	Davis.....71	Cont...7 L	6-3½x4½	23.44	Strom.	A-L..	s-p B&B..	Warner	m Peters	½F Tim	5.10	R1-R2†	
850	880	1045d	1035	1250	1545d	1545d	116	32x4*	Dodge Brothers.....	Cont...8 R	6-3½x4½	27.34	Strom.	A-L..	s-p B&B..	Warner	m Peters	½F Tim	5.10	R1-R2†	
3950	3950	4150c	4095c	555	5800	5800	136	32x6	Dorris.....6-80	Own...	6-4 x5	38.40	Strom.	West..	Bosch..	m-d Own..	B-L..	m Spicer	½F Tim	3.77	R1-R2
1095	1095	1245c	1353d	1595	1535d	1535d	115	31x4*	Dort.....27	Falls T8000	6-3½x4½	23.41	Carter..	Bosch..	m-d Detl..	Own...	f Ther.	½F Flm	4.66	R1-R2	
6500	6500	6750	6500c	7800	7800	7800	131	33x5	Duesenberg...Straight 8	Cont...8 R	8-2½x5	26.45	Strom.	Delco..	s-p B-C..	Own...	f Cli..	½F Own	4.90	F-L-T1	
1990	1990	1990	2350	2550	2550	2550	124	32x4½	Dupont.....C	H-S...90	6-3½x5	29.40	Strom.	West..	m-d B-L..	B-L..	m Spicer	F Col.	4.70	R1-R2	
800	800	1065d	1305	1365	109	109	31x4	Durant.....A-22	Cont...Spec	4-3½x4½	24.03	Tillotson	A-L..	s-p Own..	Warner	m Spicer	¾F Ad.	4.33	R1-R2		
820	820	1275d	1395c	1595	115	115	30x3½	Eagle.....6	Cont-Spec	6-3½x4½	23.44	Tillotson	A-L..	s-p B&B..	Warner	m Spicer	½F Ad.	4.77	F-L-R		
1485	1095	1275d	1395c	1595	112	112	32x4	Earl.....40	Own...	4-3½x5	18.91	Snee..	A-L..	s-p B&B..	Own...	f Own..	½F Own	4.87	R1-T1		
995	995	1195d	1251	p1625d	112	112	31x4*	Elcar.....4-40	Lye...CF	4-3½x5	21.03	Rayfield	Delco..	s-p B&B..	Warner	m Mech.	½F Salis	4.70	R1-R2†		
1395	1395	1495c	1995d	2195	118	118	32x4	Elcar.....6-60	Cont...8 R	6-3½x4½	27.34	Strom.	Delco..	s-p B&B..	Warner	m Hart	¾F Salis	4.70	R1-R2†		
1395	1395	1995	2145	2345	3000d	3000d	118	32x4*	Elgin.....25	Falls T8000	6-3½x4½	23.44	Strom.	DeJon..	s-p B&B..	Snee..	½F Col.	4.66	F-T1†		
850	850	975	975	109	110½	110½	31x3½	Essex.....6	Own...	6-2½x4	16.54	Stewart..	Bosch..	m-d Own..	Own...	m Spicer	½F Own	5.40	R1-R2		
1295	1295	1295	1895c	2035	120	120	32x4½	Flint.....	Cont. Spec	6-3½x5	27.31	Strom.	DeJon..	s-p Own..	Warner	m Spicer	½F Ad.	4.77	F-L-T1		
235p	235p	230c	525	685	590d	590d	100	30x3½	Ford.....T	Own...	4-3½x4	22.50	Strom.	A-K..	s-p D..	Own...	¾F Own	3.63	T-L-R2		
2975	2975	3975	3975	132	132	132	32x4½	Fox.....Air-Cooled	Own...	6-3½x5	27.34	Zenith	West..	Scintilla..	m-d B-L..	B-L..	m Spicer	½F Tim	4.90	R1-R2	
2975	2975	1950	1950	2750c	2250	2250	115	32x4½	Franklin...10-B	Own...	6-3½x4	25.35	Own...	A-K..	s-p M&E..	Own...	m Spicer	F' Own..	4.73	T-L-R1	
895	895	995d	1095	1145	1415	1415	112	32x4	Gardner...Series 5	Lye...Spec	4-3½x5	21.76	Zenith	West..	s-p B&B..	Mech..	m Peters	¾F Flm	4.80	R1-T1	
530	530	630	630	720d	735	735	104	30x3½	Gray.....	Own...	4-3½x5	21.03	Snee..	West..	s-p Own..	Detr.	m Mech.	½F Tim	3.90	R1-T1	
2250	2250	3350	3350	120	126	126	32x4½	H.C.S...Series 4	Weid...	4-3½x5	22.50	Strom.	Deleo..	m-d B-L..	B-L..	m Spicer	¾F Own	4.63	R1-R2		
2650	2650	3350	3350	121	121	121	32x4½	H.C.S...Series 6	Cont...8 R	6-3½x5	29.40	Strom.	Deleo..	m-d B-L..	B-L..	m Spicer	¾F Own	4.36	R1-R2		
1395	1395	1495c	1495c	2195	121	121	32x4	Hanson.....66	Cont...8 R	6-3½x4½	27.34	Marvel	Deleo..	s-p B&B..	G-L..	m Univ..	F Tim	4.66	R1-R2		
1775	1775	2175c	2175c	2350	121	121	32x4	Hathfield.....6-55	H-S...40	6-3½x5	25.35	Strom.	Bosch..	s-p B&B..	Durston	m Spicer	½F Col	4.63	R1-R2		
1295	1295	1695b	d1795t	1845	[2295d]	121	32x4½	Haynes.....60	Own...	6-3½x4½	29.40	Rayfield..	L-N..	Kingst..	m-d Own..	Mech..	m Thie..	½F Own	4.41	T-L-T1	
1350	1350	1425	1475	1895	126	126	31x4½	Hudson...Super 6	Own...	6-3½x5	29.40	Stewart..	Bosch..	m-d Own..	Own...	m Spicer	½F Own	4.45	R1-R2		
1175	1175	1195d	[1145]	1750	115	115	32x4½	Hupmobile...Series R	Own...</												

The Complete Line of WEED BUMPERS FOR 1924

(List Prices in effect November 10, 1923)



WEED "STURDY" SPRING-BAR BUMPER
2½-inch—List Price Complete—Black, \$26.00; Nickel, \$28.00



WEED "SAFETY" SPRING-BAR BUMPER
2-inch—List Price Complete—Black, \$21.00; Nickel, \$23.00



WEED "SERVICE" BUMPER
1¾-inch—List Price Complete—Black, \$16.50; Nickel, \$17.00



WEED "SAFETY LIGHT CAR" BUMPER
1¾-inch—List Price Complete, for Chevrolet, Ford, Gray, Overland and Star Only—Black, \$14.00; Nickel, \$15.00



WEED "TWINBAR" BUMPER
2-inch—List Price Complete—Black, \$14.00; Nickel, \$15.00



WEED "TWINBAR" BUMPER
1¾-inch—List Price Complete, for Chevrolet, Ford, Gray, Overland and Star Only—Black, \$12.50; Nickel, \$13.50



WEED "HOOVER TWINBAR" BUMPER
1¾-inch—List Price Complete, for Chevrolet, Ford, Gray, Overland and Star Only—Black, \$11.00; Nickel, \$12.00

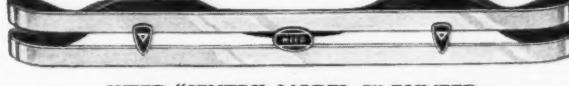
(List Prices in effect November 10, 1923)



WEED "SENTRY, MODEL A" BUMPER
2½-inch—List Price Complete—Black, \$27.00; Nickel, \$28.00



WEED "SENTRY, MODEL B" BUMPER
2-inch—List Price Complete—Black, \$22.00; Nickel, \$23.00



WEED "SENTRY, MODEL C" BUMPER
1¾-inch—List Price Complete—Black, \$19.50; Nickel, \$20.00



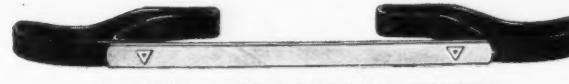
WEED "SENTRY, MODEL D" BUMPER
1¾-inch—List Price Complete, for Light Cars—Black, \$16.50; Nickel, \$17.00



WEED "SECURITY" BUMPER
1¾-inch—List Price Complete, for Chevrolet, Ford, Gray, Overland and Star Only—Nickel, \$12.50



WEED "SENTRY, MODEL 23" BUMPER
1¾-inch—List Price Complete—Nickel, \$19.00



WEED "HOOVER SINGLE-BAR" BUMPER
2-inch—List Price Complete—Black, \$14.00; Nickel, \$15.00

Weed Bumpers and attachments are covered by patents issued 7-18-16, 10-24-16 and 4-3-17 broadly controlling Spring-Bar Bumpers; 2-4-13 covering End Thrust Brackets; 6-15-20 and 4-12-21 covering Spring-Bar Bumpers with widened impact area between the ends of bumper bar protecting radiator and gas tank.



AMERICAN CHAIN COMPANY, INC.
BRIDGEPORT, CONNECTICUT

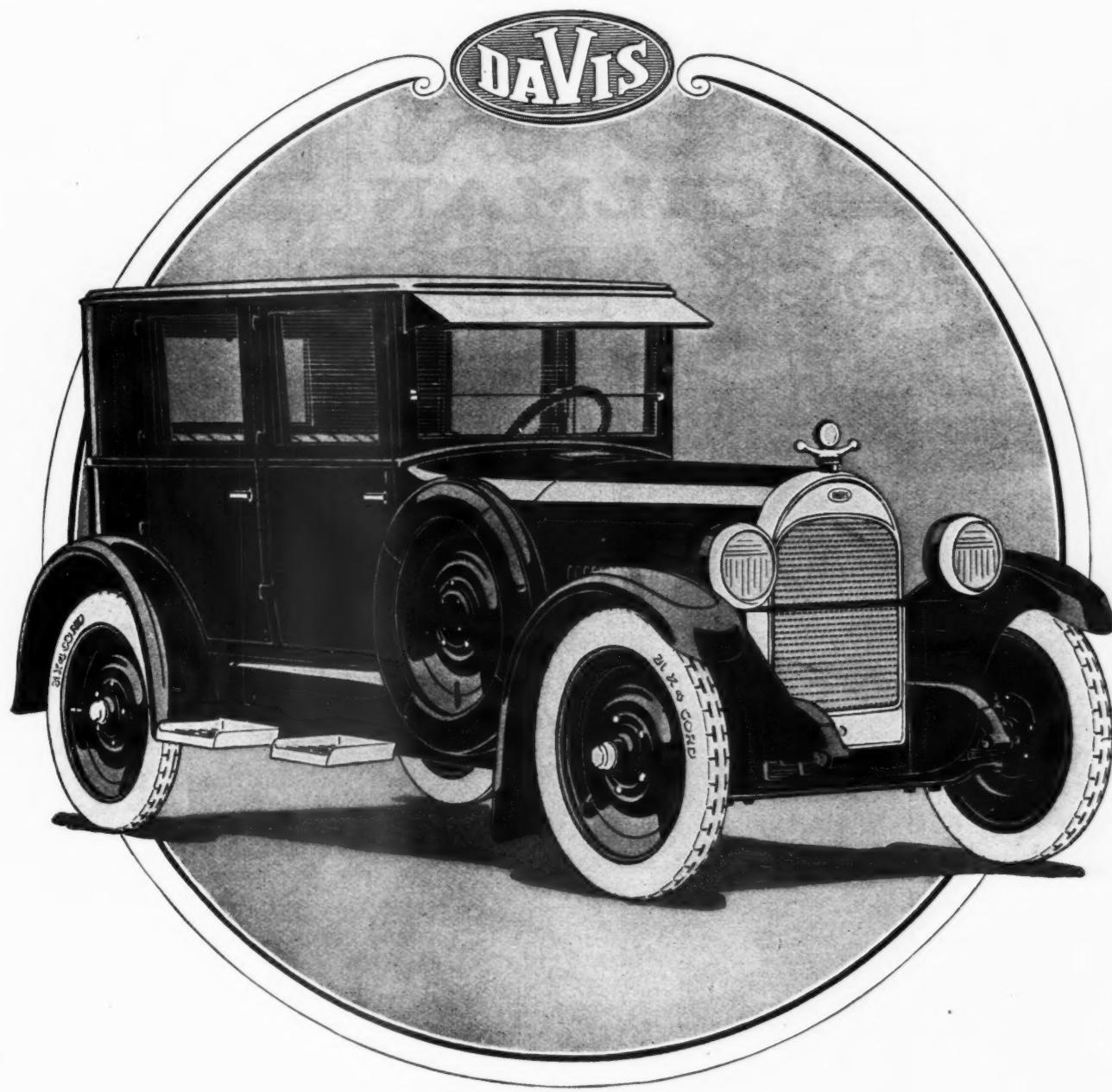
In Canada: DOMINION CHAIN COMPANY, LIMITED, Niagara Falls, Ontario
District Sales Offices: Boston Chicago New York Philadelphia Pittsburgh San Francisco

THE WORLD'S LARGEST MANUFACTURERS OF WELDED AND WELDLESS CHAINS FOR ALL PURPOSES

Current Passenger Car Specifications

(This list comprises cars distributed on a national basis)

PRICES										NAME AND MODEL	ENGINE			ELECTRICAL SYSTEM		GEARSET MAKE	REAR AXLE				
OPEN MODELS			CLOSED MODELS			TIRE SIZE (INS.)†				No. of Cyls. Bore and Stroke	Horse Power Rating (N.A.A.C.)	Carburetor Make	Generator and Starter Make	Ignition Make	Clutch Type and Make	Universal Type and Make	Type and Make	Gear Ratio ‡‡	BRAKES, SERVICE AND EMERGENCY		
2-3 Pass.	4-5 Pass.	6-7 Pass.	Sport Models	2-3 Pass.	4-5 Pass.	6-7 Pass.	Wheel Base (Ins.)†	117	32x4												
5030	5000	5000	4200g	6300	6500	132	33x5*	LaFayette.....	Own.....	8-3½x5½	33.80	Johnson	Deleo..	m-d Own..	Own...	F Std	4.58	R-L-R2			
1395	1815	1995	2145d	1845	1985	119	32x4*	Lexington.....Concord	Ansted-M.	6-3½x4½	26.30	Rayfield	G-D..	Conn...	Warner...	½F Salis	5.10	R-L-T1			
12195	12195	12245	12200	12235	12095	123	32x4½*	Lexington.....MinuteMan	Anst....M	6 3½x5½	26.30	Rayfield	t-i-D..	s-p Long...	Warner...	½F Salis	5.10	R-L-T1			
1575	1575	1575	1575	1575	1575	117	32x4	Liberty.....6-E	Own.....	6-3½x5	23.44	Strom...	Wagner	s-p B&B..	Detroit	m Spicer	1½F Tim	4.50	R-L-T1		
3800	3800	3800	4000e	4400	4900	136	33x5*	Lincoln.....	Own.....	8 3½x5	36.45	Strom...	Delco..	m-d Own..	Own...	F Tim	4.58	R-L-R2			
8510	8510	8510	5200	1700	5100S	1120	32x4	Locomobile.....Series 8..	Own.....	6-4½x5½	48.00	Ball&B.	West..	Deleo..	m-d Own..	m Own...	F Own	3.50	R-L-R2		
2300g	2785	2785	2985a	3585	4285b	136	32x4½*	Marmon.....34	Own.....	6 3½x5½	33.75	Strom...	Deleo..	m-d Own..	Own...	m Spicer	¾F Own	4.10	R-L-R2		
795	795	795	895b	935	1195	1585d	109	31x4	Maxwell.....25	Own.....	4-3½x4½	21.03	Stewart	Remy..	s-p Mech..	Own...	f Own...	½F Own	4.60	R-L-T1	
2500	2500	2500	3000	127	32x4½	McFarlan.....SV	Wise...Y	6-3½x5	27.34	Rayfield	Deleo..	m-d Long...	Warner...	Own...	½F Univ	5.10	R-L-T1				
5400	5400	5700	6720	6800	6810	110	33x5	McFarlan.....TV	Own...	6-4½x6	48.00	Rayfield	(West..	m-d M&E	Own...	F Peter	3.75	R-L-R2			
1295	1295	1295	1495d	1685c	1695	115	31x4*	Moon.....U6-40	Cont....7 U	6-3½x4½	23.41	Strom...	Deleo..	s-p B&B..	Warner...	½F Tim	5.10	R-L-T1			
1	1785	2150	2555	2185	128	32x4*	Moon.....6-58	Cont...8 R	6-3½x4½	27.34	Strom...	Deleo..	s-p B&B..	B-L...	m Spicer	1½F Tim	5.09	R-L-R2			
995	995	995	995	995	995	113	31x4*	Moon.....6	Cont-Spec.	6-3½x4½	23.44	Strom...	Deleo..	s-p B&B..	Warner...	½F Tim	5.10	R-L-T1			
1240	1240	1050z	1045e	2090e	1640	2040	121	33x4	Nash.....691-3-6-7	Own.....	6-3½x5	25.35	Marvel	Deleo..	s-p B&B..	Own...	m Own...	½F Own	4.50	R-L-T1	
915	915	915	1195d	1195	1195	112	33x4	Nash.....692-4-5-8	Own.....	6-3½x5	25.35	Marvel	Deleo..	s-p B&B..	Own...	m Own...	½F Own	4.90	R-L-T1		
2175	2175	2175	2185d	3250	3285	130	32x4½	National.....BB	Own.....	6-3½x5½	29.40	Rayfield	West..	Deleo..	s-p B&B..	B-L...	m Univ.	F Col	1.08	R-L-R2	
945	945	945	1095a	1195	1315	113	31x4	Oakland.....6-54	Own.....	6-2½x4½	18.90	Strom...	Deleo..	s-p B&B..	Hoos	Muncie	½F Own	4.70	R-L-T1		
750	750	750	885d	955	1035	110	31x4	Oldsmobile.....30	Own.....	6-2½x4½	18.15	Zenith	Deleo..	s-p B&B..	Muncie	f Own...	½F Own	5.10	R-L-T1		
495	495	495	395g	750	795	695d	100	30x3½	Overland.....91	Own.....	4-3½x4	19.60	Tillotson	A-L...	s-p B&B..	Own...	m Own...	½F Own	4.50	R-L-R2	
695	695	695	695	695	695	106	30x3½	Overland.....92	Own.....	4-3½x4	19.60	Tillotson	A-L...	s-p B&B..	Own...	m Own...	½F Own	4.50	R-L-R2		
2585	2585	2350	2750c	3275e	3450	126	33x4½	Packard.....126	Own.....	6-3½x5	27.31	Own...	A-K...	Deleo..	m-d Own..	Own...	m Spicer	½F Own	4.66	F-R-R2	
		2785	2450g	3625f	3750f	133	33x4½	Packard.....133	Own.....	6-3½x5	27.31	Johnson	Deleo..	s-p B&B..	Own...	½F Tim	1.60	F-R-R2			
3850c	3850c	3650	4550c	4725	1700S	136	33x5	Packard "Eight".....136	Own...	8-3½x5	36.45	Own...	Dyneto..	m-d Own..	Own...	m Spicer	½F Own	4.70	F-R-R2		
		3850	3850	4900f	4970s	143	33x5	Packard "Eight".....143	Own...	8-3½x5	36.45	Own...	Dyneto..	m-d Own..	Own...	½F Tim	1.70	F-R-R2			
1795p	1795p	1795	d2395s	2555	2595	131	33x4*	Paige.....6-70	Cont-Spec.	6-3½x4½	33.75	Rayfield	Remy..	A-K...	Warner...	m Meen	½F Tim	4.60	R-L-R2		
1550	1550	1425	1465d	2395d	2395	120	32x4½	Paterson.....23-6-52	Cont...8 R	6-3½x4½	27.31	Strom...	Deleo..	s-p B&B..	Dursten	m Hart...	½F Salis	1.50	R-L-R2		
1985	1985	1985	2675	2675	126	32x4	Peerless.....Six	Own.....	6-3½x5	29.40	Johnson	Deleo..	s-p B&B..	Own...	m Spicer	½F Tim	4.66	F-R-R2			
2690	2690	2750	2260g	3390	3390	138	33x5	Peerless.....66	Own...	8 3½x5	33.80	Ball&B.	Deleo..	m-d Own..	Own...	½F Tim	1.50	R-L-R2			
5250	5250	5250	6800	6800	6800	138	33x5	Pierce-Arrow.....33	Own.....	6-4 x5½	38.40	Own...	Deleo..	m-d Own..	Own...	m Spicer	½F Own	4.25	R-L-R2		
1695	1695	1745	2445	2195t	126	32x4½	Pilot.....6-56	H-S...90	6-3½x5	29.40	Tillotson	Wagner	Wagner	m-d Own..	Dursten	m Hart...	½F Salis	1.50	R-L-R2		
2535	2535	2585	2585d	2635d	3385	3585	126	32x4½	Premier.....6-D	Own...	6-3½x5½	27.34	Strom...	Deleo..	s-p B&B..	Own...	m Blood	¾F Col	1.67	R-L-R1	
2300	2300	2300	2400e	3000d	3050	124	32x4½	R & V Knight.....II	Own..Kn'gt	6-3½x5½	29.40	Rayfield	Deleo..	s-p B&B..	Own...	m Spicer	½F Tim	1.58	R-L-R2		
1335	1335	1335	1545d	1975	1975	120	32x4*	Reo.....T6	Own...	6-3½x5	24.34	Rayfield	N.E...	m-d Own..	Own...	m N.E...	½F Own	1.70	R-L-R2		
3200c	3200c	3200c	4000	131	131	32x4½	Revere.....M	Monsen...4	4-3½x6	30.63	Strom...	West..	Bosch..	m-d B-L..	B-L...	m Spicer	¾F Strd	3.44	R-L-R2		
1635	1635	1585	2035	2135	117	32x4*	Rickenbacker.....B	Own...	6-3½x4½	23.44	Strom...	Bosch..	s-p Own...	Own...	m Mec...	¾F Own	4.60	F-T1			
2685	2685	2685	2750c	3285	3285	118	32x4½	Roamer.....6-54-E	Cont.12XD	6-3½x5½	29.40	Strom...	West..	s-p B&B..	Fuller	m M&E	¾F Tim	1.00			
3685	3685	3485	380J	3650c	4250p	138	32x4½	Roamer.....6-54-E	Cont.12XD	6-3½x5½	29.40	Strom...	West..	s-p B&B..	Fuller	m M&E	¾F Tim	4.00	R-L-R2		
4785	4785	895	975	1175	1275	112	31x5½	Roamer.....4-75-E	Cont.12XD	4-4½x6	28.90	Strom...	West..	s-p B&B..	Fuller	m M&E	¾F Tim	4.63	R-L-R2		
11400	11400	10900	11450	11275	12850	112	31x5½	Rollin.....40-50	Own...	4-3½x4½	16.90	Tillotson	Dyneto..	s-p B&B..	Muncie	f Smead	½F Salis	5.10	F-R-R2		
					13500	12900	133x5	Rolls-Royce.....40-50	Own...	6 4½x4½	48.60	Own...	Deleo..	m Univ..	Own...	m Own...	F Own	3.72	R-L-R2		
1615	1615	1615	2615d	2615	136	33x5	Sayers Six.....GL	Cont...6 J	6-3½x5	33.75	Strom...	Deleo..	s-p B&B..	B-L...	m Cle...	F Tim	1.91	R-L-R2			
985	985	985	3585	3855	112	31x4	Seneca.....50c & 51c	Lye...CF	4-3½x5	21.03	Zenith	Deleo..	s-p B&B..	A-L...	m Univ...	F Pen	4.50	R-L-R2			
2750	2750	2750	2425d	3585	3855	130	32x4½	Stanley.....710	Own...	2-4 x5	13.00	None	None...	None...	None...	½F Own	1.50	R-L-R2			
490	490	490	610d	785	p935d	102	30x3½	Star.....710	Cont. Spec.	4-3½x4½	15.63	Tillotson	A-L...	s-p Own..	Warner...	m Spicer	¾F Tim	1.87	R-L-R2		
1750e	1750e	1445z	c1995p	2350	d2195t	119	33x4½	Stearns-Knight.....SKL4	Own..Kn'gt	4-3½x5½	22.50	Schebler	A-L...	m-d Own..	Own...	f Cl...	½F Own	1.50	R-L-R2		
2395	2395	2495	2195g	3395	3395	130	33x5	Stearns-Knight.....6	Own..Kn'gt	6 3½x5	25.35	Schebler	A-L...	m-d Own..	Own...	f Cl...	½F Own	1.70	R-L-R2		
1295	1295	1295	1595d	1995	2250	117	32x4	Stephens.....10	Own...	6-3½x4½	25.35	Strom...	Deleo..	s-p B&B..	Mech..	m Mech	½F Tim	5.10	R-L-T1		
1750	1750	1595	1850c	2250	124	33x4½	Stephens.....20	Own...	6-3½x4½	25.35											



THE DAVIS UTILITY BROUHAM

Model 79 - \$1495

—at the factory, plus tax

1923 was the most successful year
in fourteen years of Davis history.

1924 will be still better.

GEORGE W. DAVIS MOTOR CAR COMPANY - RICHMOND, IND.

DAVIS

"BUILT OF THE BEST"

BURD GILMAN SHOCK ABSORBER



Snubs Every Shock

The Steel Cable Will Not Stretch, Fray or Break
Only Two Moving Parts

Practically Universal Fittings

One type and size of fittings, furnished with each set, is adaptable to 97% of all passenger cars of present day manufacture. This is a distinct advantage to both dealer and car owner.

Write for Descriptive Circular, Prices and Discounts

BURD HIGH COMPRESSION RING COMPANY
Makers of the Famous Burd Piston Rings
Rockford, Illinois, U. S. A.

Another Welco convenience for Motorists that means profits for you—

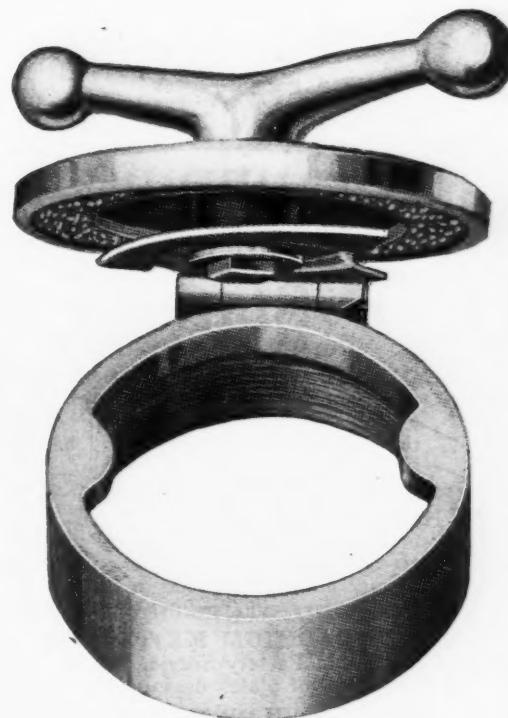
They are waiting for this "NEVA-LOST" Gas Tank Cap

Here comes a car—driver in a hurry—needs gas—pulls up to filling station—fools around trying to loosen tightened tank cap—needs wrench—gets it off after damaging it—lays cap on tank—tank filled—looks at watch hurriedly—forgets cap—steps on gas—hits hole down road—cap slips off tank—arrives at destination—too late—missed important engagement—starts home disgusted—and then finds tank cap gone! "Damnation, something ought to be done to prevent loss of caps".

This movie is enacted in real life every day and makes prospects for you that would buy the Welco "NEVA-LOST" gas tank cap, if you asked ten dollars for it! It screws on the tank permanently. A quarter turn of the bar handle opens or locks the hinged top. The solid cork washer shown on the inside top of the cap, fits snugly to the lower portion when locked, preventing loss of gas from slopping or evaporation. It may also be used for a radiator cap—there's a chance to sell two at a time! Handsomely nickel-plated and put up with attractive display stand. Assortment consists of twelve caps which cover the sizes for over sixty popular makes of cars. Individual Welco "Neva-Lost" caps put up in substantial cartons with size, number and makes of cars to which the specified number is adaptable.

Put the "Neva-Lost" Tank Cap on your counter and get business on an article motorists want! There's a good profit for you too. Ask your jobber to supply you.

The Welco Ford Foot Accelerator and Welco "Glare-Stop" Shield are two other drawing cards you should consider. Watch for advertisements on these.



\$2.00

TRADE MARK
Welker-Hoops Mfg. Co.
Middletown, Ct.

WELCO PRODUCTS

**A Complete Line
of
Electrical
Testing
Equipment
*for Service
Stations***

**FOR
1924**

HOYT ROTARY METER AND SHUNT—
a serviceable 6-range voltmeter for finding
grounds, shorts, open circuits, poor connec-
tions—also field, armature and battery trou-
bles. Small enough to slip into your
pocket.....\$25.00

HOYT CELL TESTER—an instrument
needed by every service man—gives immedi-
ate comparative check on the individual cells
of any battery and thus measures the work
that battery can perform.....\$11.00

HOYT CADMIUM METER and PRODS—
for use in Battery Service Stations to prove
condition of plates during charge.....\$17.50

HOYT GROWLER METER and CONTACTOR—to be used in conjunction with any
growler to make possible the complete test-
ing of any armature.....\$19.00

HOYT PORTABLE MAGNETOMETER—
an instrument designed for testing the con-
dition of Ford magnetos.....\$10.00

HEYER IGNITION TESTER—A complete
outfit built up in units so that a customer
may purchase—
A variable speed drive for generator testing.....
A portable ignition tester of special design.....
The equipment complete.....\$420.00

HEYER BATTERY CHARGERS—built in
different units, for handling the require-
ments of service stations of varying size—
price depends on capacity, voltage and
frequencies.

FREE BOOKLETS—a request on your business letterhead will bring any one or all
of the following educational pamphlets:
“Hunting Down Electrical Troubles.”
“The Cadmium Test.”
“Growler Chart.”
“Miho Chart” (showing various battery tests.)

MIHO BATTERY TEST EQUIPMENT

Model A—for complete discharge and other tests	\$53.50*
Model B—for breakdown test only....	39.00*
Model C—for low rate discharge and cycling	33.00*

MIHO ELECTRIC BATTERY OPENER—
will open batteries quickly and cleanly at
low cost

MIHO GROWLERS—two types; one
equipped with meter, rheostat and special
contact fingers—the other, the plain growler
without appurtenances

MIHO FORD COIL TESTER—a small port-
able tester for use with 6 volt storage bat-
tery

SHURO BATTERY CONNECTORS—A
new product for battery stations. Two con-
tacts with 15 inches of rubber-covered con-
necting wire, complete. Box of 10.....\$2.25

*Price—East of Rocky Mountains

All of this equipment is distributed to the
service station thru legitimate wholesalers
with the assistance of technically trained field
men whose business it is to understand the
requirements of the trade. This company is
also cooperating with the

SERVICE EQUIPMENT ASSOCIATES
in an endeavor to build up the Service Stations
and make it easier for them to learn of, and
obtain standard equipment thru their jobbers.

Burton-Rogers Company

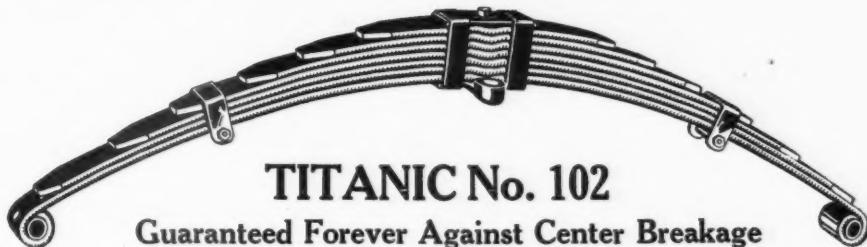
26 Brighton Avenue, Boston

Branch offices and Distributors in all principal cities.

**“The Best-Equipped Shop
Gets the Business”**



A REAL SPRING FOR FORDS



TITANIC No. 102

Guaranteed Forever Against Center Breakage

This spring is the head liner on the replacement spring stage.

It brings in the money and that is what you are after.

Why put on another spring like the one that broke and then lose your profit, and maybe your customer, because that one snaps, too?

Why not sell your customer a spring that will stand up—one that brings you worth-while profit?

TITANICS **do** stand up. They go on as easily as ordinary bolt center springs and they stay on. They have the **unbreakable hump center**, guaranteed forever.

TITANICS are made entirely from oil-tempered alloy steel, and they are severely tested.

TITANIC SPRINGS

Tuthill Spring Co., 760 Polk St., Chicago, Ill.

Builders of Quality Springs for over Forty-Four Years.



Don't Forget the Last 44 WORDS

of J. H. Collins' article
in the January issue of
Automobile Trade Journal

"—probably the most striking feature of the automobile business for the year just closed has been the unprecedented volume of sales of replacement parts * * * the parts and accessories business has been growing at four times the rate of the new car business, in spite of the tremendous production records rolled up by car makers during the past two years. These facts should materially influence dealers' plans in the next twelve months as they intimately affect the profit side of the

ledger. With more and more business coming from the field of maintenance and operation, it becomes increasingly necessary for the farsighted dealer to readjust his business to assure permanent profit from the fastest growing sections of his industry. *The dealer's largest profits are beginning to come from what were formerly side lines, and the retail sales organizations that live through 1924 will principally be those who learn to carry sales for maintenance and operation at a profit instead of at a loss.*"

—if you have some connecting rods in your shop that need rebabbitting, new bolts and nuts, laminated shims, new piston pin bushings, remember that Watkins will rebuild them at a price to yield you at least twice the cost of such service. *That's profit in 1924.*

—and just remember that the quick-fit-to-crank-shaft of connecting rods rebabbitted by a Watkins Service Plant, cuts down time on flat rate repair jobs. *That's profit in 1924.*



There are 13 Watkins Service Factories located at convenient centers throughout the United States. This trade mark is your guarantee of Watkins Super-Service on all connecting rods sent to any one of the branches listed below.

WATKINS
Complete **REBABBITTING**
SERVICE

Send Parts to Factory Nearest You for ONE DAY Service

HARTFORD, Conn.	Ripley Motor Services
INDIANAPOLIS, Ind.	Indiana Watkins Mfg. Co.
KINGSTON, Ont.	Watkins Mfg. Co. of Canada, Ltd.
LOS ANGELES, Calif.	Miller & McIntyre
MEMPHIS, Tenn.	J. B. Cook Auto. Machine Co.
NEW YORK, N. Y.	Lake Sales Company
OMAHA, Nebr.	Interstate Machinery & Supply Co.

ST. LOUIS, Mo.	H. & H. Machine Co.
SYRACUSE, N. Y.	Watkins Mfg. Co. of New York
TOLEDO, Ohio.	Stewart-Burgan Co.
WASHINGTON, D. C.	R-L Motive Parts, Inc.
WATERLOO, Ia.	All States Rebabbitting Service
WICHITA, Kans., Home Office	The Watkins Mfg. Co.



The UNITED
AIR CLEANER
IS YOUR
OPPORTUNITY



There is



a model



for every



make and size

THE air is brought in at the top of the Cleaner where it passes over the rapidly revolving rotor.

Starting the engine automatically starts the rotor, as any amount of air drawn through the carburetor must pass through the Cleaner.

The heavier-than-air particles are thrown outward to the inside wall of the Cleaner shell where they whirl and are forcefully ejected to the outer air. The clean air which is close to the rotor, or on the inside of the whirl, is taken up under the edge of the rotor and down into the carburetor.

Accurate scientific tests, made under both working and laboratory conditions show that 99.6% of all dust is thrown out. The air reaching the combustion chamber, piston rings, cylinder walls, and bearings, is free from abrasive material, eliminating wear to all moving parts.

EVERY bearing except that of the pistons against the cylinder walls is guarded against dust and grit. That alone is unprotected — and worst, dust and grit are sucked in without restraint.

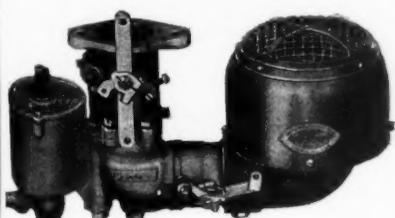
Engineers sought an air-cleaner for many years. They asked for small size, easy installation, freedom from service, simplicity and delivery of clean air.

They found it in the United Air Cleaner. So well did it meet their requirements that 83 of them use it as standard equipment on their 1924 models.

Owners of earlier models, and new ones not so equipped, will also want the freedom from reboring, the continued peppiness of youth, and the additional years of life given by the United Air Cleaner.

When you become our distributor these same features will sell United Air Cleaners for you. Proof of this is that two distributors have made a tremendous success although they were without the help of the merchandising campaign and the advertising now ready to help you. The story of one of them is on the next page.

UNITED MANUFACTURING & DISTRIBUTING CO.
9705 Cottage Grove Avenue
CHICAGO



of carburetor



\$4,500

Additional Profit

THERE had been a long drought and the roads were hub-deep in dust as sharp as torpedo sand.

A certain dealer's cars were being brought in too frequently for cylinder grinding and new piston rings. Other makes were suffering, too, but the large proportion of his cars made their case seem worst.

But he knew of United Air Cleaners. He got some quickly, and sold them to his customers. Immediately the trouble

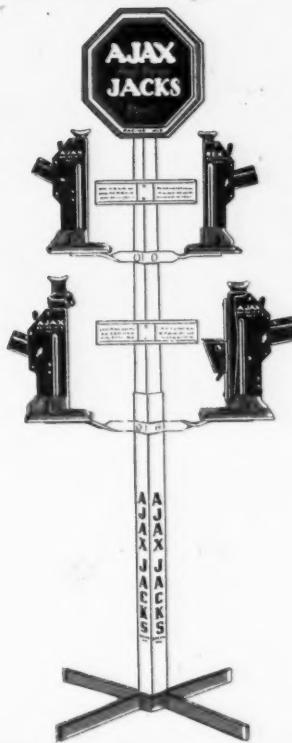
ceased. His car began to sell beyond his wildest hopes. Owners of other makes came to him for help. He stocked models for their cars and sold them. At the end of the month his profits with United Air Cleaners were over \$4500.

This case is unusual only because one season's damage was being done in a week. The same is going on in your community. The same remedy will be as popular, and pay as well. To get it you have only to write a note. Do it now.

The UNITED AIR CLEANER

Figure Up What It Costs You To Carry "Stickers"

**Check over the Lines
You Carry and See
How Slow Movers Are
Retarding Your Turn-
over.**



There are but four jacks in the Ajax Red Base Jack line. Every one a rapid, steady seller. Yet these four jacks meet every need in the passenger car and light truck field. You are assured of maximum turnover with the Ajax line. No part of the capital you invest in Ajax Jacks will be idle. Every cent will earn you a profit.

Ajax Jacks are Standard Equipment on Twenty-Two Well Known Makes of Automobiles

THE AJAX DISPLAY STAND shown above is a tireless, hard-working salesman. It not only suggests the purchase of a jack to car owners, but answers their questions as to proper size, etc. Put this talkative salesman to work for you today. Your jobber's salesman will be glad to tell you how you can secure one FREE without making a big investment.

Similar Advertisements Appear In Leading Automotive Magazines

Ajax Auto Parts Co., Dept. A-502, Racine, Wis.

AJAX RED BASE JACKS



Its hum
is music
to a good
mechanic's
ear

REXOID

TRANSMISSION LINING

FOR FORD CARS

Like every Thermoid Product
-it Wears

REXOID keeps the car running like a breeze. That is a well-known fact. But what's the reason? Rexoid is treated with a compound that oil cannot dissolve. It keeps the oil cleaner. And clean oil keeps the engine happy.

Every thread and fibre of Rexoid is welded under tremendous heat and pressure into one dense solid mass. Rexoid's gripping surface does not wear off. Rexoid furnishes layer upon layer of "gripping surface." Rexoid grips evenly from *first to last*.

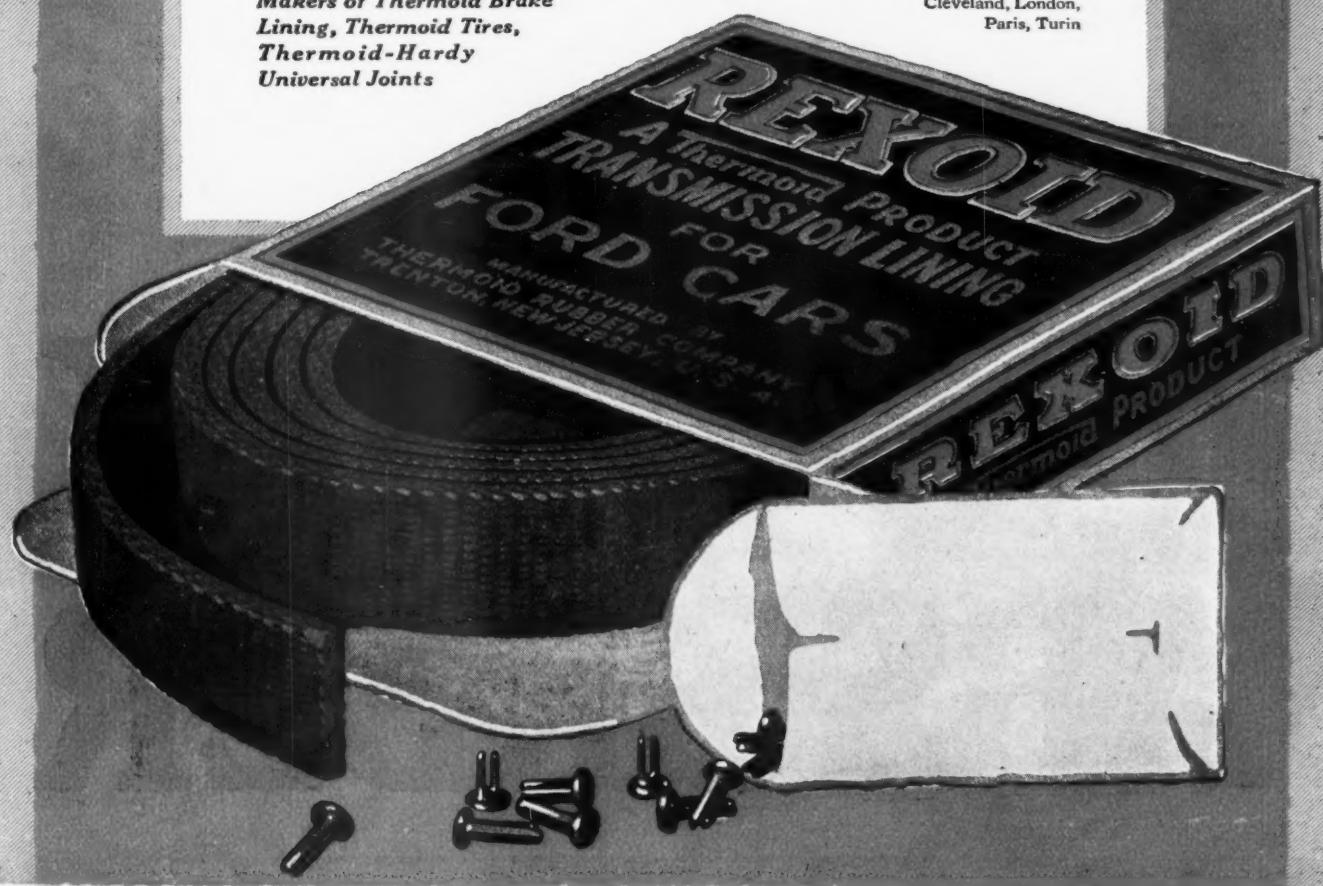
And why does Rexoid outlast other linings by many and many a mile? It contains about 50 per cent. more material, for one thing.

THERMOID RUBBER COMPANY, Trenton, N. J.

New York, Chicago, Los Angeles, Detroit, Atlanta, Seattle, Kansas City,

Boston, San Francisco,
Cleveland, London,
Paris, Turin

*Makers of Thermoil Brake
Lining, Thermoil Tires,
Thermoil-Hardy
Universal Joints*



The NEW



SHOCK ABSORBER

BOSCH



Smoothes the Road

Shanidair

Here's the Shock Absorber that's going to be the "big seller" this year! Try it yourself and you'll agree—it makes such a wonderful improvement in a car's riding qualities you'll see in a minute that owners everywhere are going to sing its praises!

It's a Bosch quality job clear through—It has the Bosch Reputation to back it—It has over 750 Bosch Service Stations to provide service. Everybody will hear about it! Big full page ads in the Saturday Evening Post and other leading nationals will broadcast its advantages continuously.

The Bosch will soon be the best advertised, most talked about shock absorber on the market—and dealers everywhere will make big profits! Now's the time to act—to get your place known as Bosch Shock Absorber Headquarters.

Wire for sample set at quantity discounts C. O. D. and start selling while the big advertising drive is on.



PRICES
Per Pair—

for
FORDS
Ten Dollars

for
Medium Cars
Fifteen Dollars

for
Heavy Cars
and Trucks
Twenty Dollars

AMERICAN BOSCH MAGNETO CORP.

Main Office and Works: Springfield, Mass.

Branches:

New York

Chicago

Detroit

San Francisco

FYRAC

Night GUIDE

THE
SUPER
SPOTLIGHT

THE
SUPER
SPOTLIGHT

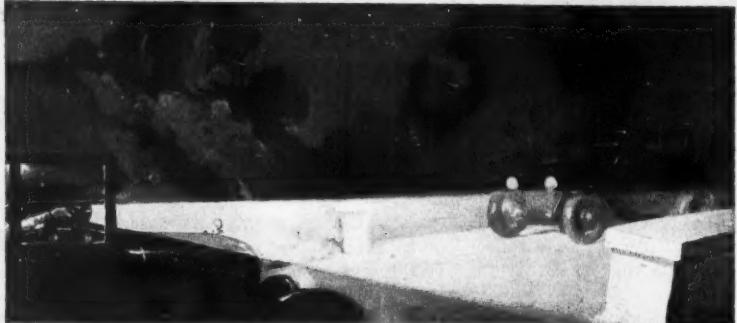
Lights the Way to Dealer Profits

Broadcasting Again in Feb. 23 Post!

THE SATURDAY EVENING POST

FYRAC

Night GUIDE — *the Super Spotlight*



—Safety costs so little

ARE you helpless when blinding headlights approach? Do you "feel" your way along, and trust in blind luck to come through safely—to avoid the culvert, the ditch or road obstructions?

Don't do it! Safety is so certain, so easily attained, so inexpensive with the Fyrac Night Guide! Aim its bright, clear beam over the right hand shoulder. Then enjoy your night driving. You can "see" even when bright lights approach. You can keep on the road, and know what's ahead.

Fyrac's 1500-foot beam is controlled from within the car. This super spotlight fits through the windshield glass—it's handsome reflector out in front, its convenient Gun Grip inside at the finger ends. Closed windows or curtains do not hamper its use. You can turn its beam in any direction, and it "stays put" regardless of road shocks.

Installed at dealers' while you wait, without removing the windshield. \$12.75 installed. We guarantee every windshield in which a Fyrac Night Guide is installed.

Made, sold and fully guaranteed by Fyrac. Clever post cards, window posters, streamers and the like are available.

Fyrac Manufacturing Company, Rockford, Illinois

Fits through your windshield glass

We believe in going all the way to help dealers make big profits on the Fyrac Night Guide. We supply, at frequent intervals, window posters and streamers tying up with current Post ads. At the right is a small reproduction of a recent window streamer, attractively printed in the standard Fyrac colors, yellow and black, size 10 by 50 inches.

This is Station FNG—Fyrac Night Guide—broadcasting a program that spells PROFITS for dealers.

Our "sending station" is The Saturday Evening Post, and we're filling the air with the story of the Fyrac Night Guide.

At the left is a miniature of our next full page ad. It appears in Feb. 23 Post.

Thousands of dealers are tuning in for the extra profits this advertising is helping to create. Are you?

That "Rolls-Royce" Feeling for Every Fyrac Dealer

Do you envy the fellow who drives around with a chauffeur in a Rolls-Royce? Do you think of his feeling of serene satisfaction as he drives along knowing there is no finer car on the road?

That same feeling is enjoyed by Fyrac dealers. They are conscious that no better light is made than the Fyrac Night Guide. On top of that, they know they sell the best advertised light.

The Night Guide has behind it the biggest and strongest advertising campaign ever put back of any spotlight!

FYRAC Night GUIDE
the Super Spotlight

FYRAC

Night GUIDE

THE
SUPER
SPOTLIGHT

THE
SUPER
SPOTLIGHT

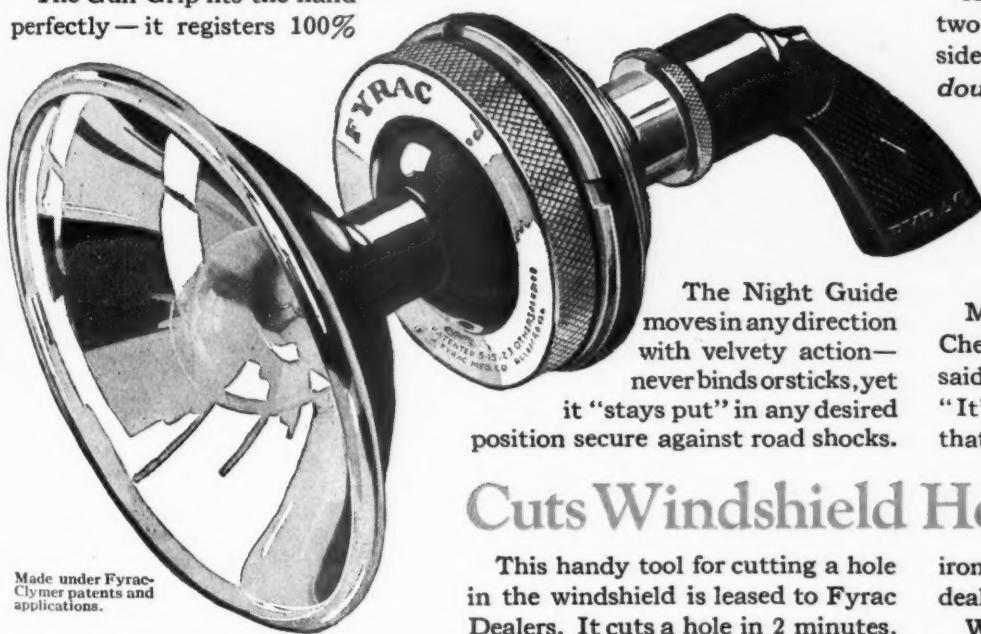
Lights the Way to Dealer Profits

A Real GUN GRIP —Made of BAKELITE

Here's a feature that helps to make quick sales. It's the Fyrac Gun Grip. To place the Night Guide in a motorist's hand is to make him want one.

The Gun Grip fits the hand perfectly—it registers 100%

Bakelite in the Fyrac Night Guide. The ball on which it operates is also made of Bakelite, which is the secret of its smooth operation.



Made under Fyrac-Clymer patents and applications.

both in comfort and in attractiveness. It's a *real* Gun Grip, too—not moulded from rubber, but made of genuine Bakelite.

The Gun Grip, by the way, is only one place where we use genuine

The Night Guide moves in any direction with velvety action—never binds or sticks, yet it "stays put" in any desired position secure against road shocks.

Cuts Windshield Hole in 2 Minutes

This handy tool for cutting a hole in the windshield is leased to Fyrac Dealers. It cuts a hole in 2 minutes, without removing the windshield. Thus it enables the dealer to offer while-you-wait installation to his customers—a feature that wins many added sales.

So efficient is the Fyrac Glass Cutting Tool that we can back it with an

Sells 4 to One Car Owner

R. S. Hartzell, Cleveland, Ohio, tells of one dealer who sold 4 Fyrac Night Guides to one customer—two for each of the customer's two cars.

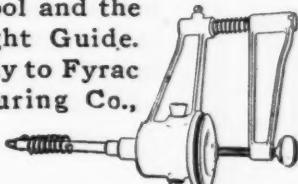
A great many car owners are buying two Fyracs per car, putting one in each side of the windshield. This means double profits for Fyrac dealers.

Don't think from this, however, that the Fyrac appeals only to owners of high-priced cars. Thousands of small cars, from Fords up, are equipped with the Night Guide.

Mr. Barkman of the Barkman Chevrolet Co., Danville, Ill., recently said in placing an order for 30 Fyracs, "It's the demand from our customers that makes me place this order."

iron-clad guarantee protecting the dealer against windshield breakage.

We shall be pleased to tell you all about the Fyrac Glass Cutting Tool and the Fyrac Night Guide. Write today to Fyrac Manufacturing Co., Rockford, Illinois.



Guarantee Against Windshield Breakage
If you break a windshield, we pay for it



It's Marked with a



"See the letter 'D' on the hexagonal head of that clip-bolt? There's the mark that tells you it's a Genuine Detroit Spring—built *exactly* to the car maker's specification. It's the one way you can be absolutely sure that your broken spring is replaced with an *exact* duplicate—in length, width, number and thickness of leaves, camber, and kind of steel, carbon or alloy. Look for it on every spring you buy.

"And it stands for quick service, too. On any car or truck you may be running, I can replace a broken spring and have you on the road again in *jig time*."

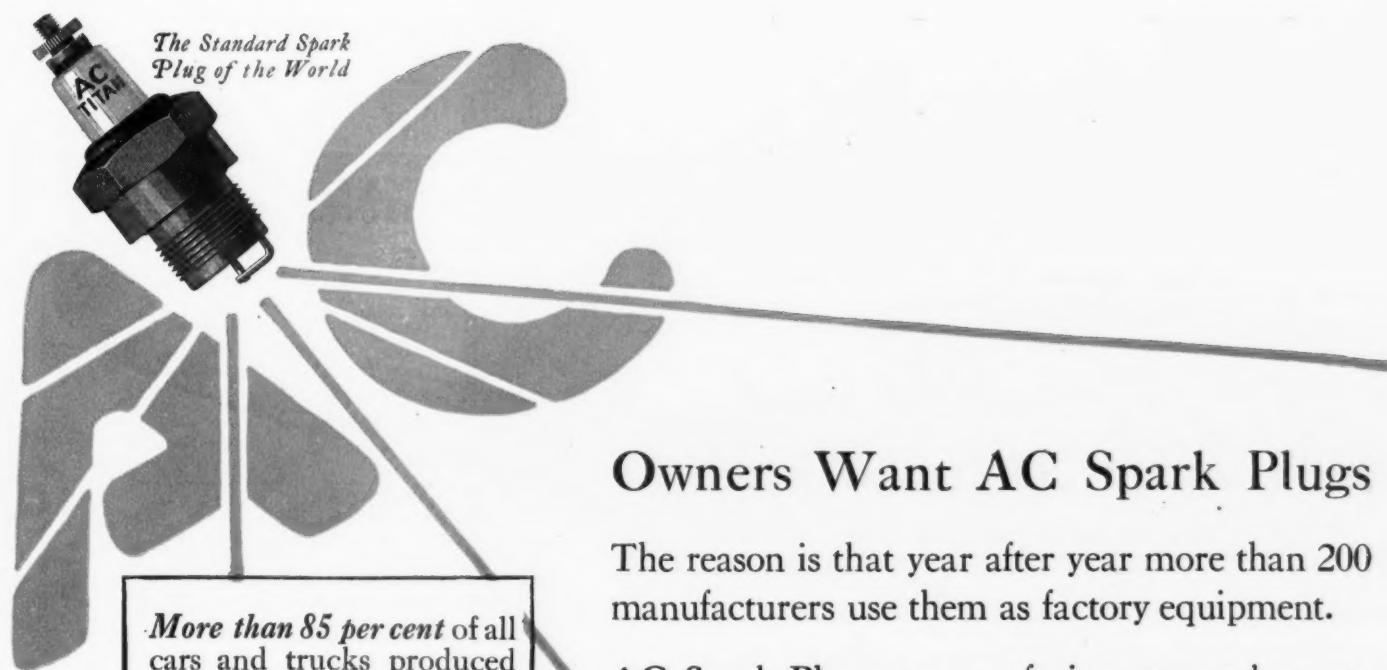
That's the way we can help you get replacement business and hold it. In every section of the country a stock selected to fill the requirements of that section is carried by the Detroit Spring Distributor. Write today for price list and names of near-by distributors.

DETROIT STEEL PRODUCTS COMPANY
2268 East Grand Blvd. Detroit, Mich.

Over 35% of all cars built during 1922, outside of Fords were produced by automobile manufacturers using Detroit Springs.



BUILT TO THE CAR MAKERS' SPECIFICATIONS



More than 85 per cent of all cars and trucks produced in this country, Fords excluded, are factory equipped with AC Spark Plugs. Among these cars are:

Buick	Hupmobile
Cadillac	Jewett
Chalmers	Jordan
Chandler	LaFayette
Chevrolet	Marmon
Chrysler Six	Maxwell
Cleveland	Nash
Dodge Brothers	Oakland
Dort	Oldsmobile
Durant	Paige
Essex	Peerless Six
Hudson	Star
	Yellow Cab

This tremendous, ready-made market for AC's is right at your door and will always be there in ever-increasing size.

There is a type and size for every motor

Owners Want AC Spark Plugs

The reason is that year after year more than 200 manufacturers use them as factory equipment.

AC Spark Plugs are a safe investment because they are backed up by this equipment business as well as by strong national advertising, which creates a big demand for them not only from the owners of AC-equipped cars but from the owners of other makes as well.

Every day this demand grows larger.

AC's are the best known, the easiest selling and most profitable spark plugs to stock.

The AC 1075 for Fords is a big seller because it is a better plug for Ford engines—it satisfies the owner and makes money for the dealer.



The accurate, easily installed Ford Speedometer can be sold to every Ford owner

SPARK PLUGS SPEEDOMETERS

AC Spark Plug Company, FLINT, Michigan

Makers of AC Spark Plugs—AC Speedometers

U. S. Pat. No. 1,135,727, April 13, 1915. U. S. Pat. No. 1,216,139, Feb. 13, 1917
Other Patents Pending



V shaped---- the fan belt you've been waiting for!



Gilmer Radiator Connections are ready for instant installation just as they come. They can be applied in an instant and are held firmly in place by strong rubber clamp bands. (No metal clamps required.) There are Gilmer Connections made to fit all popular cars and trucks. They are packed in assortments of ten to the carton. Better order a dozen cartons to-day.

OUR endeavor has been always to have a complete proposition for the trade—complete in scope as well as in merchandising advantage. This line of V belts is another step toward completeness.

The New Gilmer Super-Service Moulded V Belt is the result of exhaustive tests. It is made of a tough cotton fabric and cord combined with a special rubber compound. It is exceptionally pliable yet remarkably sturdy and long wearing.

The New Gilmer V Belts are made in sizes for all popular cars using V or grooved pulleys. The market is at your door. The price allows you an unusual margin of profit. Now is the time to order. Write to us to-day for prices and complete information.

L. H. GILMER CO., Philadelphia

gilmer

"It's a Gilmer Product—you can depend on it."—Happy Van, the Gilmer Man.



BUTLER AXLES AND THE ACE OF HEARTS ALWAYS WIN

The Ace wins because it's the best in the deck, — likewise Butler Axles win because automobile repairmen at home and abroad have discovered that "they win" by using them as Standard Replacements. Butler Axle Shafts are guaranteed to fit, — Butler Axle Shafts are ground on all finished surfaces, and tapers within a variation of one-thousandth of an inch,—Butler Axle Shafts are hand-straightened in addition to the usual machine straightening, — Butler Axle Shafts are made from specially treated Chrome Nickel steel, and are guaranteed free from defect in workmanship or material. Order your Ace of Axles today. Also Nuts and Chrome Nickel keys and key stock.

Butler

**BUTLER AUTOMOTIVE SERVICE CO.
EASTON, PA.**

"Guards
Your
Battery's
Health"

"2-Point-Test" TRADE MARK HYDROMETER

Sells on Accuracy

Accuracy is the only thing that counts in a hydrometer. If it is not accurate, it may cost the price of a new battery. But the accurate hydrometer saves its own cost hundreds—yes, hundreds—of times by preventing costly repairs and more costly arrests.

Most hydrometers are tested at one point only. 2-Point-Test Hydrometers are carefully compared with U. S. Standard hydrometers at 1150 "empty" and 1280 "full". The user knows absolutely, the condition his battery is in. He takes no chances on heavy expense.

Tell your prospects this, and you will sell a lot of 2-Point-Test Hydrometers.

\$2.50

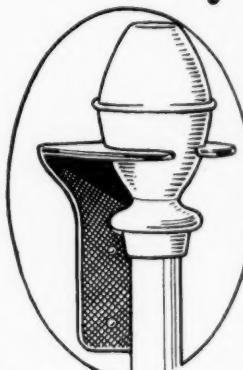
Patented
July 12, 1921
Other Patents Pending

Priced for PROFIT

We believe that every article you sell should pay its way. That is another reason, besides the expense of careful testing, for our price. You get a fair share—a share that is worth getting.

That share rolls up into a mighty handsome monthly amount with the help we give you. An orange and green display that tells the whole 2-Point-Test story does practically all the selling. Interesting, pointed circulars to send out with your bills fetch people in. Yes, you'll find, as many other dealers have, that there's money as well as more business in selling 2-Point-Test Hydrometers. Send for some.

It's tested
at both points!



Free Hanger
With Each
Instrument

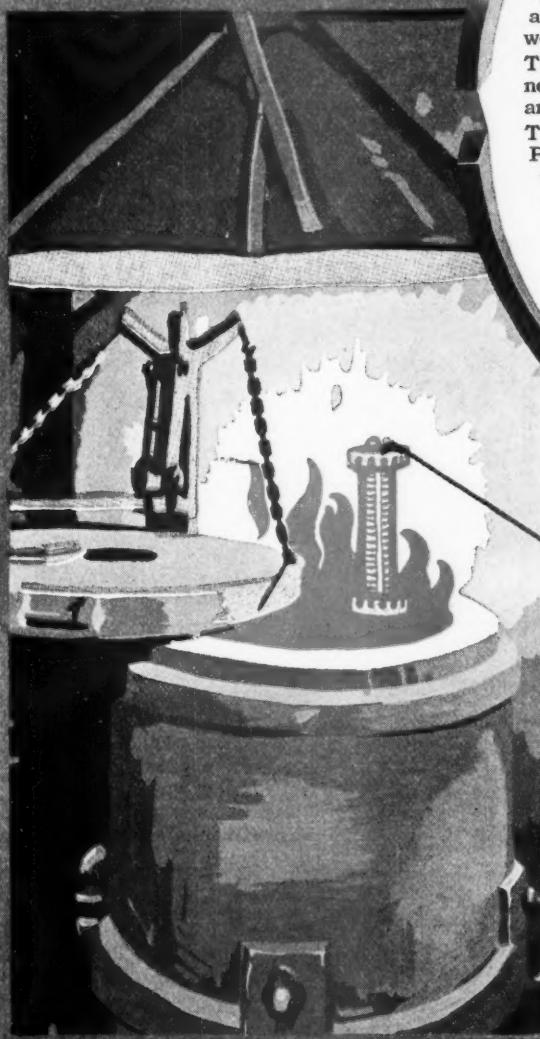


Sales Department
J. WADSWORTH STAFF
118 N. La Salle St., Chicago

N. & N. HYDROMETER CO.
3715 W. Grand Ave., Chicago



HEAT-SHAPED to insure perfect roundness



Pedrick Heat-Shaped Rings Stay "Perfect Rounds"

IN THE very last manufacturing process, Pedrick Piston Rings are Heat-Shaped to "perfect rounds" and all internal stresses are removed.

Exhaustive tests have proven that Pedrick Heat-Shaped Rings retain this perfect roundness permanently and that their radial pressure remains constant under all working conditions.

The wear on cylinder and rings is always uniform. There is no possibility of side-twist, cylinder scoring, piston leakage and blow-by.

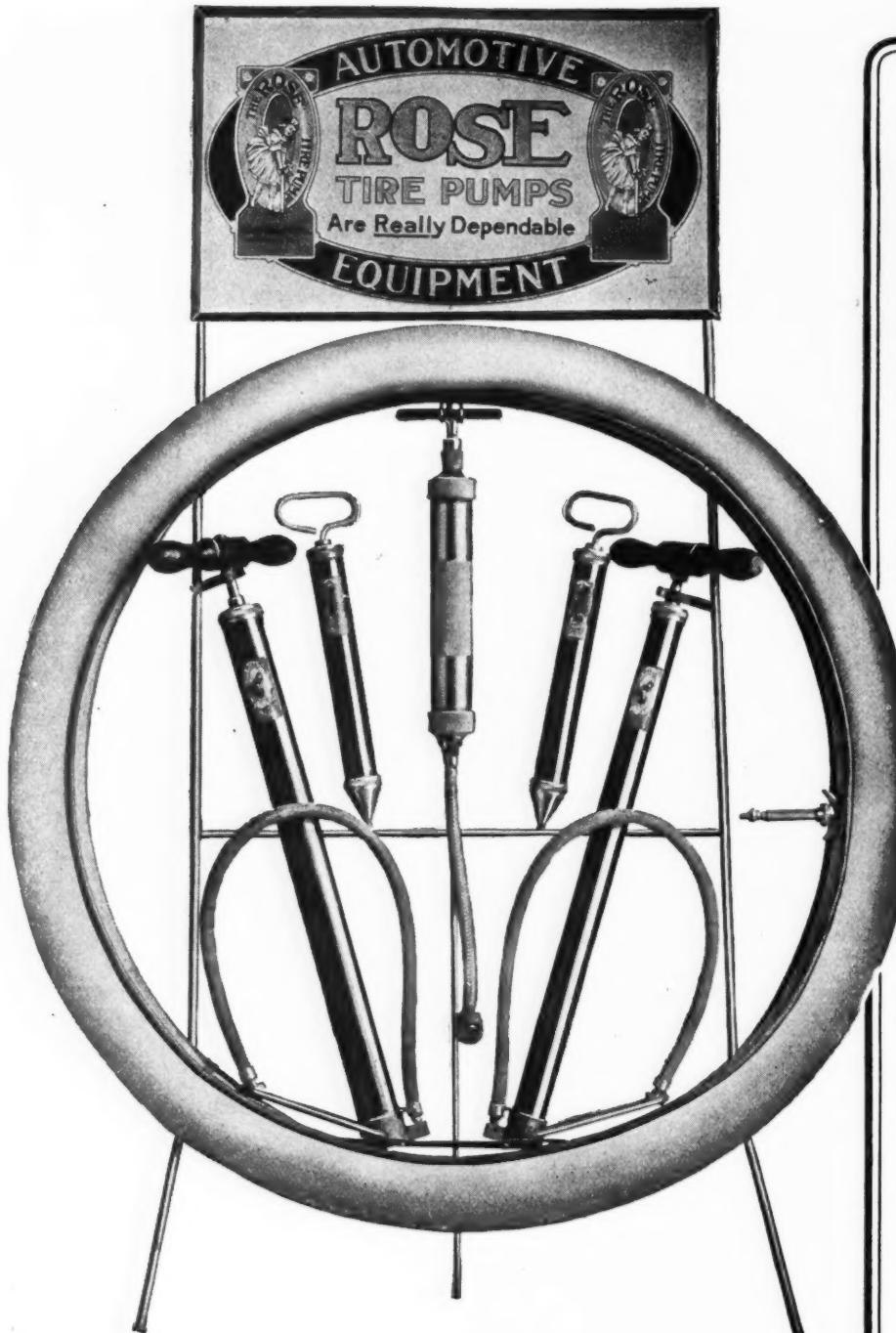
The United States Post Office Air Mail Service recognizes Pedrick superiority. The pilots of the Air Mail Service insist that Pedricks, and only Pedricks, be used for replacements in Air Mail motors.

The Cost? Priced on a big production basis, Pedrick Heat-Shaped Rings—the finest rings on the market—are sold at almost the price of a snap-ring! The Pedrick Heat-Shaped Oil Ring is sold at the same price!

WILKENING MANUFACTURING CO.
15th and Mt. Vernon Sts., Philadelphia, Pa.

Write for the complete price list and discounts!

Pedrick
HEAT-SHAPED
PISTON RINGS



Get This Free Merchandiser

Put this sales stimulator to work in your store. It is free. You only pay for the goods it displays. It is our present to you in the interest of bigger business and better profits in 1924. Your jobber can supply you. Ask him about it.

Frank Rose Mfg. Co., Hastings, Nebr.



Catch the Attention and You'll Catch the Sales

Prominently displayed goods speed up sales and profits. Your customers are shoppers. They like to see what you have in stock. They like to handle and examine things. Catching the interest is the shortest road to the sale.

Profit by this peculiarity of human nature. Get this free Rose Merchandiser. Your sales of Tire Pumps, Grease Guns and Pressure Lubricators will pick up at once. Without an ounce of extra effort you will increase your profits.

These Rose lines are leaders. Already they are showing steady profits for dealers. With the added attraction of prominent display they should be among the most profitable items in your store.

The Rose Tire Pump is second to none in merit and sales record. Easy pumping, guaranteed 5 years and reasonable price. This is the pump with the famous labor saving valve.

The Rose High Pressure Lubricating System is a highly popular seller; especially the Ford Outfit. A remarkable value for the money. Write for complete details.

You all know Rose Grease Guns, the guns with the tapered nozzle that fits any size opening snugly and prevents the grease from backing out. A steady profit item.

Around this display is an inner tube, any make you want to feature. This you supply from stock. It will boost tube sales.

All Rose Products allow a liberal margin of profit to jobbers and dealers. For particulars, write us.



Brake Lining

*Folded and Stitched
Hydraulic Compressed*

THE MILLIONS OF FEET OF HYCOE Brake Lining, made during the past year, were produced in one of the best equipped and largest plants engaged in the making of brake lining; that of The Manhattan Rubber Manufacturing Company with factories and executive offices at Passaic, N. J., and branch offices, carrying stocks at convenient distributing points. Manufacturing and testing equipment of special and advanced design keeps the manufacture under complete control, insuring uniformity of product. Experienced engineers, thoroughly familiar with all phases of brake design and mechanism and having the confidence and respect of automotive engineers connected with the prominent car manufacturers, keep the Hycoe standard up to the highest point.

Only from such a plant and with such facilities would it be possible to produce, annually, millions of feet of Hycoe Brake Lining to the complete satisfaction of its many users.

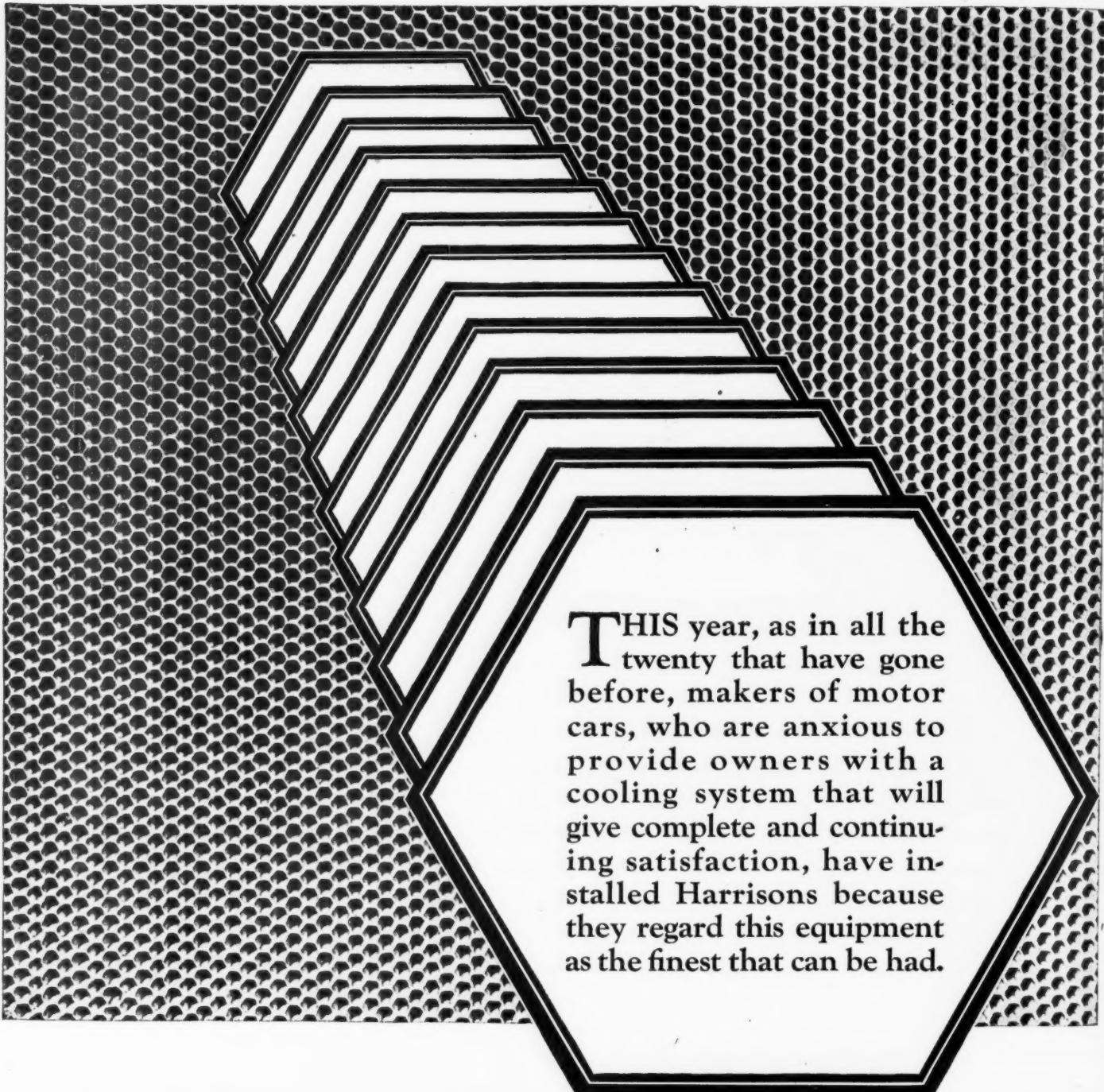
"Heretofore sold only to motor-vehicle and axle manufacturers as original equipment."

THE MANHATTAN RUBBER MFG. CO.

*Executive Offices and Factories
PASSAIC, N. J.*

"Sets a New Braking Standard"





THIS year, as in all the twenty that have gone before, makers of motor cars, who are anxious to provide owners with a cooling system that will give complete and continuing satisfaction, have installed Harrisons because they regard this equipment as the finest that can be had.

HARRISON RADIATORS

HARRISON RADIATOR CORPORATION
Lockport, New York



If you could
write your
own Contract



Oakland

Selling Agreement

If you could write your own Contract

*What position would you take
on these points?*

1. Would you make it a year-to-year contract requiring renewal each year; or would you make it a continuous contract—eliminating the uncertainties of an annual contract period?
2. What discounts on cars and parts would you consider liberal? What discounts would you specify as being sufficient to enable you to build up a profitable and permanent business?
3. What provision would you include which would enable you, with extra effort, to earn the same discount as the biggest dealers?
4. Would you want the contract you wrote to be any less liberal than fellow dealers held, or would you want convincing evidence that it was just as favorable as any dealer's selling the same line?

"Where will you be ten years from today?"

Oakland

Oakland

Selling Agreement

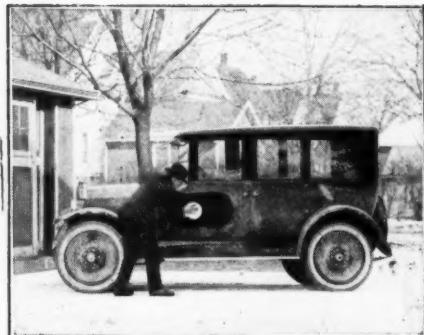
5. What attitude would you take on the question of change in list price of the car you handled during the year? Would you include in your contract a clause to protect you in case of an unexpected price reduction?
6. How would you look upon "contract deposits"? Would you favor them or would you prefer to use your whole capital in your own business?
7. Would you favor a highly restricted selling territory, or would you insist upon the privilege of also working the territory around you?
8. What service, sales, and advertising co-operation would you consider essential? Would anything less than the most liberal of policies back you up in the manner you deserve?

Probably there are numerous other provisions that you would include. Oakland asks you to ask yourself just what, in your mind, constitutes a 100% desirable contract. Then we ask you to learn how remarkably Oakland's 1924 selling agreement meets your demands. Just as the True Blue Oakland has set the pace this year—so Oakland's "true blue" contract is a four-square, man-to-man agreement which actively assists in selling this fine car. Let us prove it all to you with the actual facts. Many new Oakland dealers are today mighty glad they sent in a coupon like the one on the next page.

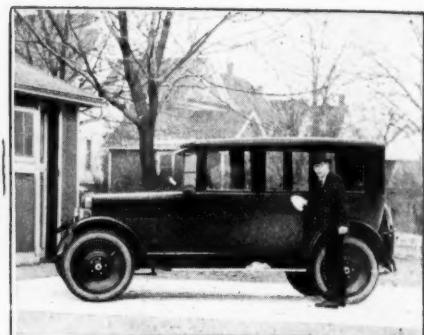




1 You can drive a True Blue Oakland through rain and mud for weeks, allow the spattered mud to remain on the finish



2 And then—quickly and easily wipe off this dirt and mud with any kind of cloth, using no soap, water or compounds



3 So that—the original lustrous body finish of the car is restored in all its beauty, without a damaging scratch or mar!

Consider What This New Finish Means to Oakland Dealers

Of course we don't need to tell you that Oakland's new body finish—Duco—is a wonderful selling help.

Think of a finish that actually looks better with use and will endure long after other finishes have dulled or checked. Oakland owners say it is one of the year's real achievements.

But think, too, what it means to sell a line of cars which does not deteriorate in appearance on your sales floor or in stock. Think of selling a car whose body is practically immune from damaging scratches or mars.

Think of a demonstrator looking just as good at the end of six months

as on the day it was put into service.

And here is something revolutionary. Oakland dealers can actually re-finish used cars in three days with this special Oakland Duco process, so they will look like new. Think how this helps to sell used cars and make quick turnovers.

Yet this new finish is only one of Oakland's advanced features for 1924. Four-wheel brakes, brand new L-head engine, bodies by Fisher, centralized controls, permanent top, glass enclosures for open cars, are a few of the things which are making the True Blue Oakland easy to sell and a fine car to own.

Your name on the coupon below will give you full information about the True Blue Oakland and the True Blue Oakland contract

Roadster - - \$945 Sport Touring \$1095
Sport Roadster 1095 Business Coupe 1195

True Blue Six

Mail This Coupon Today

Oakland Motor Car Company
Pontiac, Michigan

Please send me the inside facts about the True Blue Oakland and the True Blue Oakland franchise without any obligation on my part.

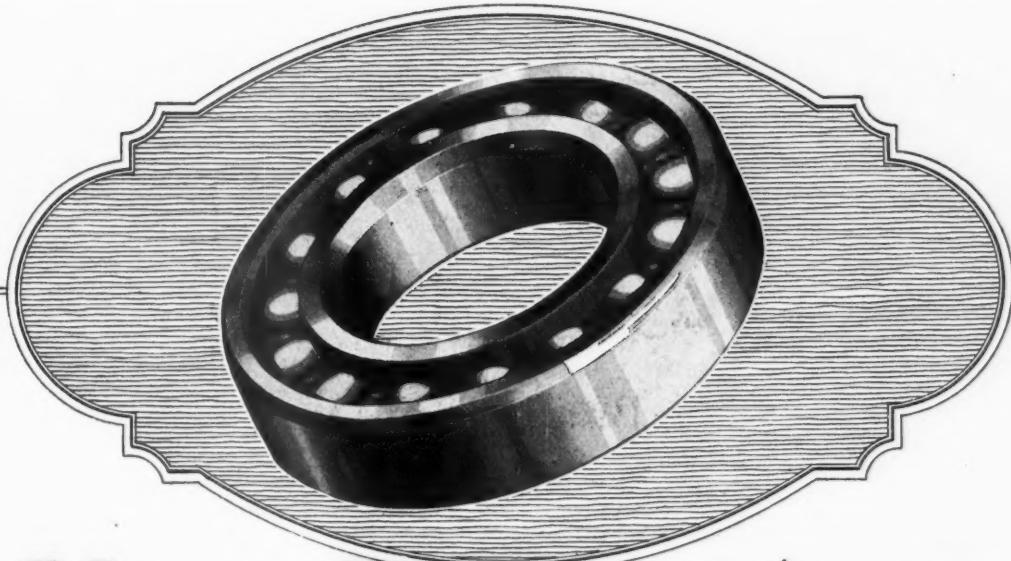
Name.....

Address.....

Coupe for Four \$1345
Sedan - - - 1395

Glass Enclosures—
Touring \$60, Roadster \$40. All prices f. o. b. factory

Touring \$945



New Departure Ball Bearings

220

makes of passenger cars and commercial vehicles are regularly equipped with New Departure Ball Bearings for 1924—a steadily growing preference gained by superior performance.



Federal Metropolitan Model—formed of one plate of open hearth steel backed by double-contour oil-tempered spring attached to bumper front by flexing swivel joints. Embossed ribs in nickel or black. A superior bumper conforming to motor car construction.

FEDERAL BUMPERS

**Universal Bracket
No. 900
Fits 69 Cars**

Ambassador	Kissel
American	Lafayette
Anderson	Lexington
Anderson Sport	Liberty
Apperson	Lincoln
Auburn	Marmon
Barley	Milburn
Buick Four	Electric
Chandler	Moon
Cleveland	Moon Sport
Colonial	National
Columbia	Oakland
Comet	Oldsmobile
Crawford	Packard Six
Daniels	Patterson
Davis	Pilot
Davis Trunk	Premier
Dodge	Renault
Dorris	Reo
Dort	R V Knight
Durant	Rickenbacker
Elcar 6-60	Roamer
Elcar 4-40	Sayers-Scovill
Elgin	Standard
Essex	Stanley
Fiat	Stearns
Flint	Stephens
Fox	Stevens-Duryea
Gardner	Studebaker B Six
Hatfield	Studebaker Special Six
Haynes	Studebaker
HCS	Stutz
Hudson	Velie
Hup	Westcott
Jewett	Willys-Knight
Jordan	Winton
King	

Special Brackets
made for all other cars

*Also manufacturers of
brake drums, disc wheels,
and heavy stampings
of all kinds*

Brackets of Open Hearth Steel

Increasing traffic congestion and the greater use of four-wheel brakes with their more abrupt stopping, emphasize the need for better bumpers.

In the design and development of Federal Bumpers better bracket construction was considered as an all-important consideration. Open hearth steel, like the stock used in automobile frames, is employed to a large extent—insuring tough, sturdy brackets not subject to cracking—brackets in keeping with the strength of Federal Bumpers.

Nickel Plating That Lasts

On the Metropolitan Model the close grain of the steel is the reason for the better appearance of the lustrous black enamel—and this same lack of large pores prevents moisture from entering to rust the nickel-plated embossed ribs.

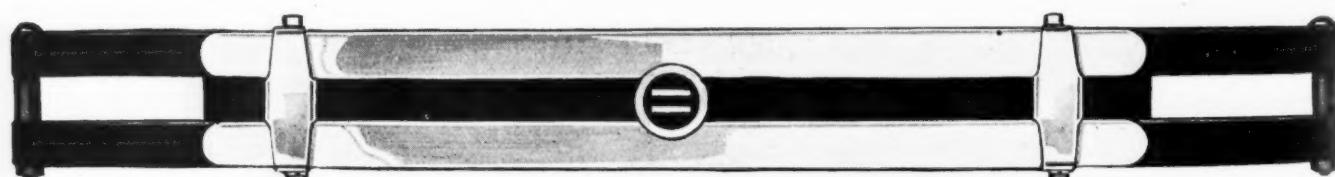
On the Broadway Rust-Proof Models close-grained alloy strips are used, formed into a semi-envelope shape to snap over the spring bars. The nickel plating is rust-proof as is also the finish on the clamps, since these are of steel (not castings) plated by a process costing three times what ordinary plating costs.

New York Automobile Show visitors—the motoring public—motor car distributors, and accessory distributing men—all were enthusiastic in pronouncing the Federal Bumper line the most striking advance in bumper construction and appearance.

A copy of our Catalog No. 11 will be mailed on request.

FEDERAL PRESSED STEEL CO.

*Jobbing Division Office
London Guarantee & Accident Building
Michigan Boulevard Bridge
CHICAGO*



Federal Broadway Models of double spring bar (2-in. and 1 1/4-in.) construction are made in three styles—all black, all nickel, and as illustrated—black with rust-proof nickel plated alloy sheaths.

Modern Chains Like These Cost No More— They Sell Faster

The wide-awake merchant always looks for the best. That's why he quickly sees the big advantages in



OFF'N'ON CHAINS



The Positive Lock

This patented lever lock makes it easy to put them on and to take them off. It takes up slack; thus saves wear on tires and chains alike. No more lost chains—no more loose chains.

The Slip-on Link

This patented slip-on link makes it easy to take off the old cross chain and put on a new one. A child can do it.



1—You can put them on and take them off in less time than other chains.

2—You can quickly and easily take off and put on a new cross chain anywhere, anytime.

Order today from your jobber. Buy spare cross chains, for you can sell a set of extra cross links with every chain.

Write us for circular and price list, giving the name of your jobber

PYRENE MANUFACTURING COMPANY

Makers of Pyrene Fire Extinguishers

Branches: CHICAGO—17 So. Jefferson Street
ATLANTA—164 Spring Street

520 Belmont Ave., Newark, N.J.

KANSAS CITY—2010 Grand Avenue
SAN FRANCISCO—977 Mission Street

And now—

For Fisk Dealers— THE BALLOON TIRE

IN line with the Fisk policy of always providing their dealers with every sound development in tire construction—so that they may obtain the greatest possible share of new business—Fisk announces the Fisk Balloon Type Cords.

Tests have proved Fisk Balloon Cords bring almost vibrationless driving, regardless of road conditions, weight or wheelbase.

Think what tremendous new business will soon develop when Fisk's national advertising tells the public about the wonderful new comfort and safety Fisk Balloon Cords bring to motoring.

Be prepared — communicate with the factory or nearest Fisk Branch for complete information.

THE FISK TIRE COMPANY, Inc.
Chicopee Falls, Mass.



It Pays to Buy a Kellogg

Model
EM 251



Quick!

That's the Kellogg EM-251 Air Compressor—
Quick air service—clean air service.
It's big enough to fill all the air needs of the average Service Station
—and priced within easy reach.
—We can prove it! — Just drop a card.

Kellogg Manufacturing Company

Rochester, N. Y., U. S. A.

NEW YORK
112 West 42nd Street

CHICAGO
1502 Monadnock Bldg.

SAN FRANCISCO
75 Fremont Street

DETROIT
2113 Dime Bank Bldg.

CLEVELAND
1108 Hippodrome Bldg.

DALLAS
2006½ Commerce Street



New Kellogg Air Tower

Attracts motorists night and day.
Air and water service combined.
Price only \$60.00.

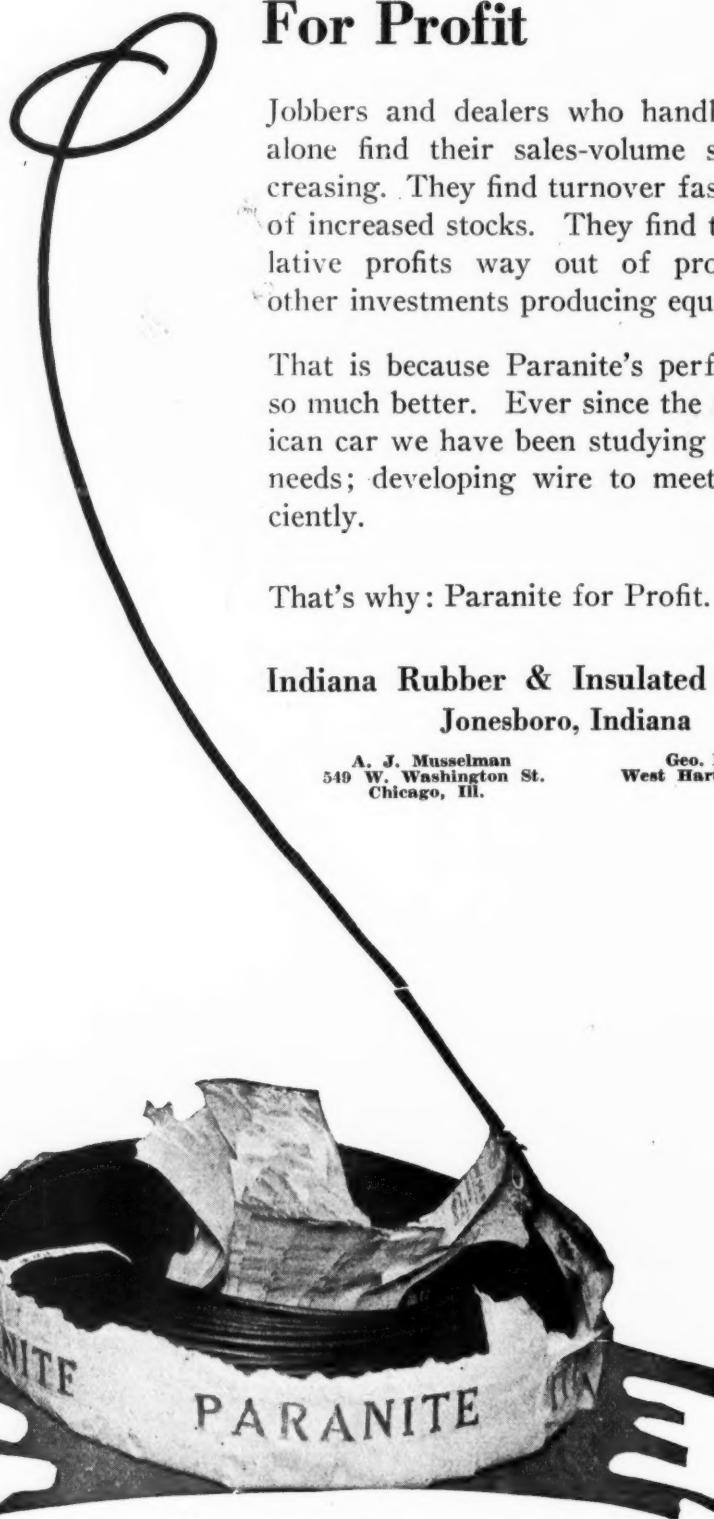
Beyond Compare for Pumping Air

IF IT'S

PARANITE

IT'S RIGHT

For Profit



Jobbers and dealers who handle Paranite alone find their sales-volume steadily increasing. They find turnover faster in spite of increased stocks. They find their cumulative profits way out of proportion to other investments producing equal sums.

That is because Paranite's performance is so much better. Ever since the first American car we have been studying automotive needs; developing wire to meet them efficiently.

That's why: Paranite for Profit.

**Indiana Rubber & Insulated Wire Co.
Jonesboro, Indiana**

A. J. Musselman
549 W. Washington St.
Chicago, Ill.

GEO. R. Hall
West Hartford, Conn.

PARANITE

How Case Precision in Manufacture Guards Case Dealers Against Loss



IN THESE days of frenzied production, many dealers find that an alarmingly high percentage of their profits is being absorbed by pre-sale labor and service costs.

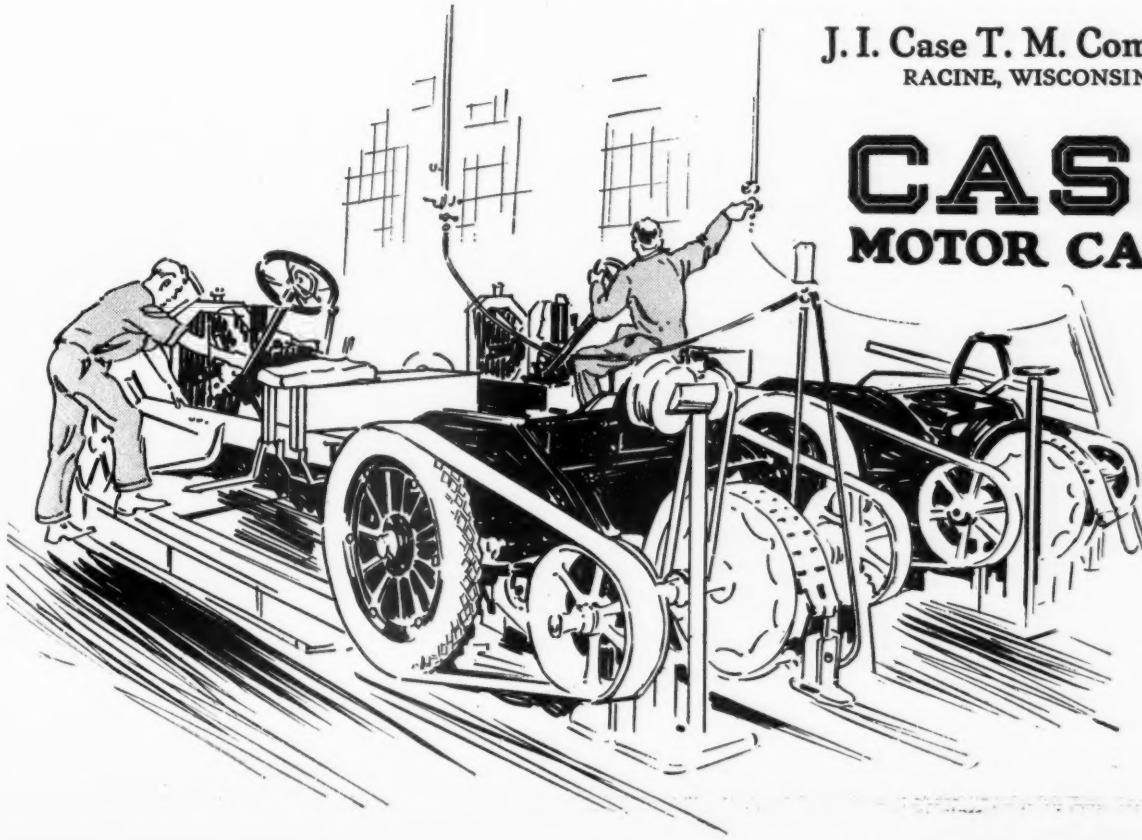
Case dealers, by way of contrast, are not acquainted with these two "profit thieves." Careful building and exacting inspection practically eliminates the necessity of the dealer spending his money to correct factory carelessness.

Each motor—though purchased as a unit—is torn down for inspection. Bearings are expertly fitted by hand. Exhaustive block tests determine the motor's fitness before it is mounted. Completed chassis are cradled and run for hours at various speeds to properly wear-in transmissions and differentials. Each chassis receives a thoro road-test before the body is mounted. Finally, the completed car is given another road-test to check up on possible squeaks, rattles, etc.

It costs more to make motor cars this way. To make our cars as nearly satisfactory as possible before they leave the factory, does hold down our production—but, then, we aspire to more than just volume. Year by year Case motor cars are being made increasingly fine.

J. I. Case T. M. Company
RACINE, WISCONSIN

CASE
MOTOR CARS



Watch It Grow



Spotlight Service

How often do you want to

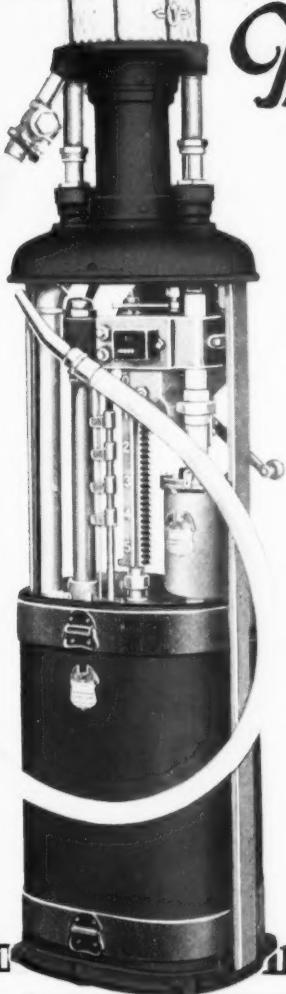
- hire a reliable employee (or find a job)
- sell something for which you can't find a buyer at home (or buy something *unusual* you can't get from *usual* sources)
- get work for idle equipment (or get work done that nobody at home can do for you)
- buy machinery if you can get it at a bargain (or sell machinery you no longer need)
- dispose of *anything* you no longer need (or see what bargains you can get on *anything* you may want to buy)

Get in the habit of consulting the Spotlight Department of this paper. And if what you want isn't advertised there, you can advertise for it yourself and at the trifling cost of 6 cents a word.

Consult the Spotlight Department
Advertise in the Spotlight Department
Watch the Spotlight Department grow

The
SPOTLIGHT
D E P A R T M E N T
THE CLASS JOURNAL COMPANY

Motor World, Motor Age, Automotive Industries,
Motor Transport, Distribution and Warehousing,
El Automóvil Americano



The VISIBLE IDEA HAS WON OUT~

Notice the two attractive service stations of the Reed Oil Co., Memphis, shown on this page. This company has standardized on American Visible Pumps. In one of their Nashville stations, they sold in *one day* 7788 gallons of gasoline from three American Visibles—a pretty good record.

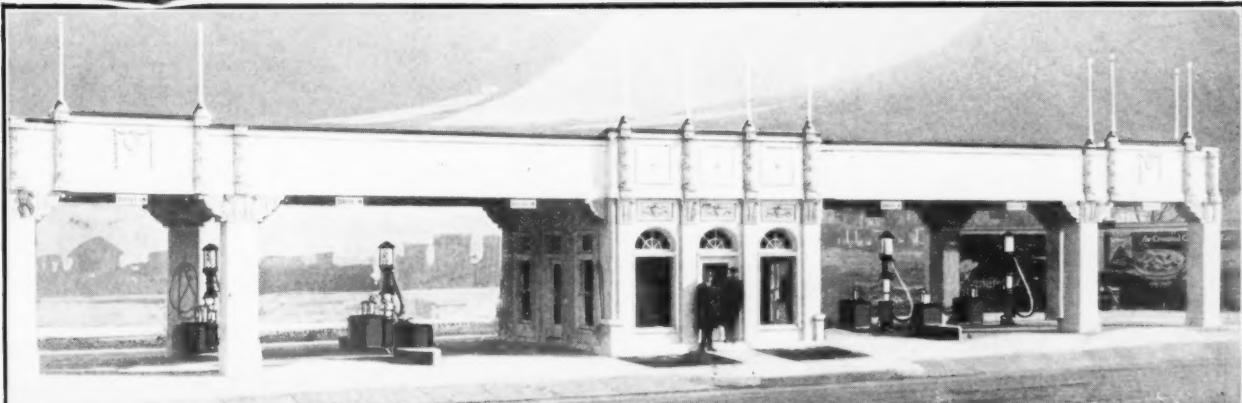
American Visible Curb Pump

To our company undoubtedly belongs the larger credit for making the *Visible* pump popular. And that popularity is due to the superior construction and continued improvements in the American Visible. *Quality, Service, Long Life,* have always been the watchwords of the manufacturers.

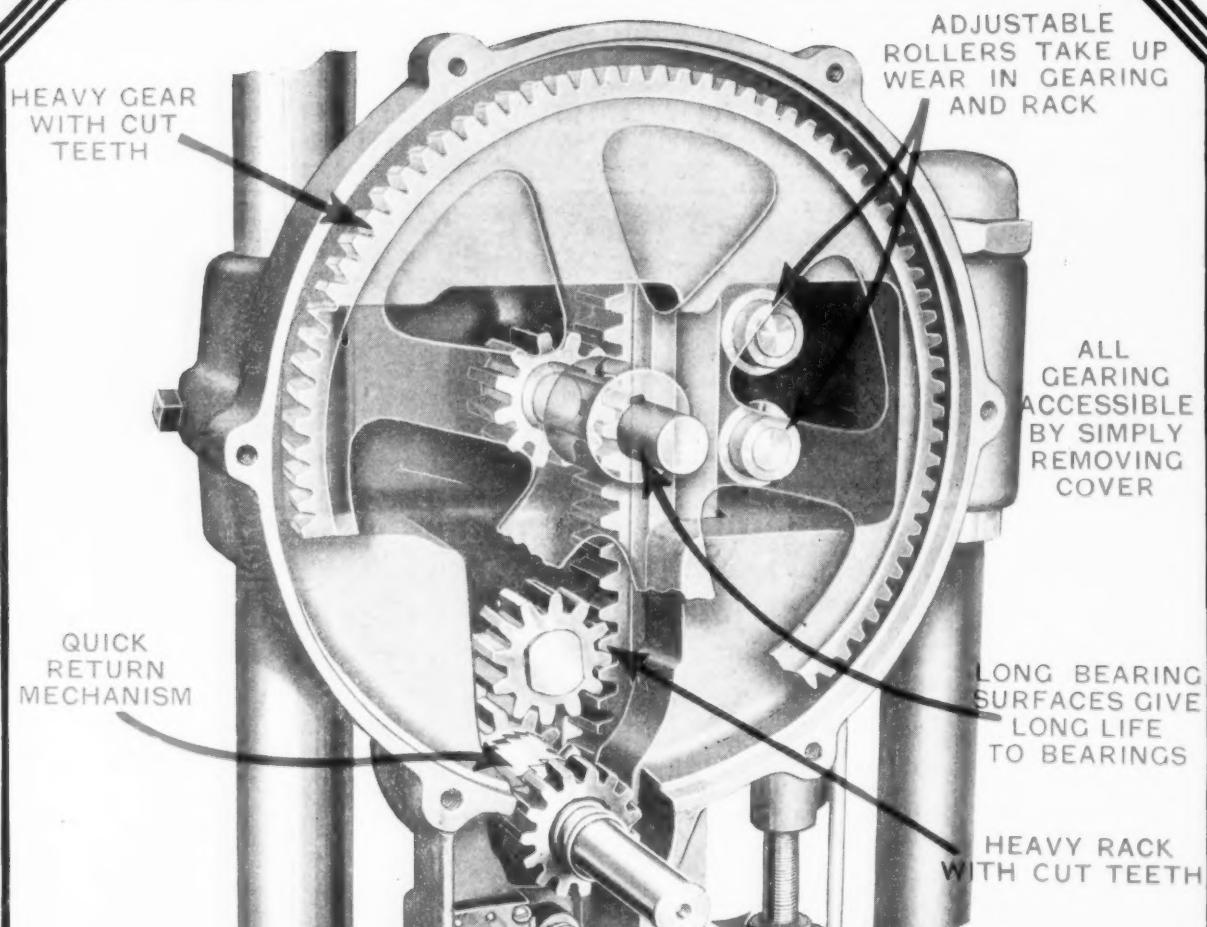
Their aim—a visible pump that will give *more service per dollar of cost* than any pump on the market.

Ask the thousands of operators of American Visibles all over the country if our aim has "hit the bull's eye." Information, prices, etc., on request.

The American Oil Pump & Tank Co., 1159 Findlay St., Cincinnati, O.



See "The Why of Superiority" on next page.



The Why of Superiority~

Claims not backed by evidence amount to little. Examine the above illustration closely and then compare, with that of *any other make* of gasoline pump on the market, this gear assembly of the

American Visible Curb Pump

Note the heavy, substantial construction of gears, with pinions of steel, case hardened—all gears with cut teeth—

The perfect alignment of rack and gears—

The adjustable cam rollers that take up wear and make repair parts unnecessary—

Exceptional ease of operation due to perfect alignment and roller bearings—

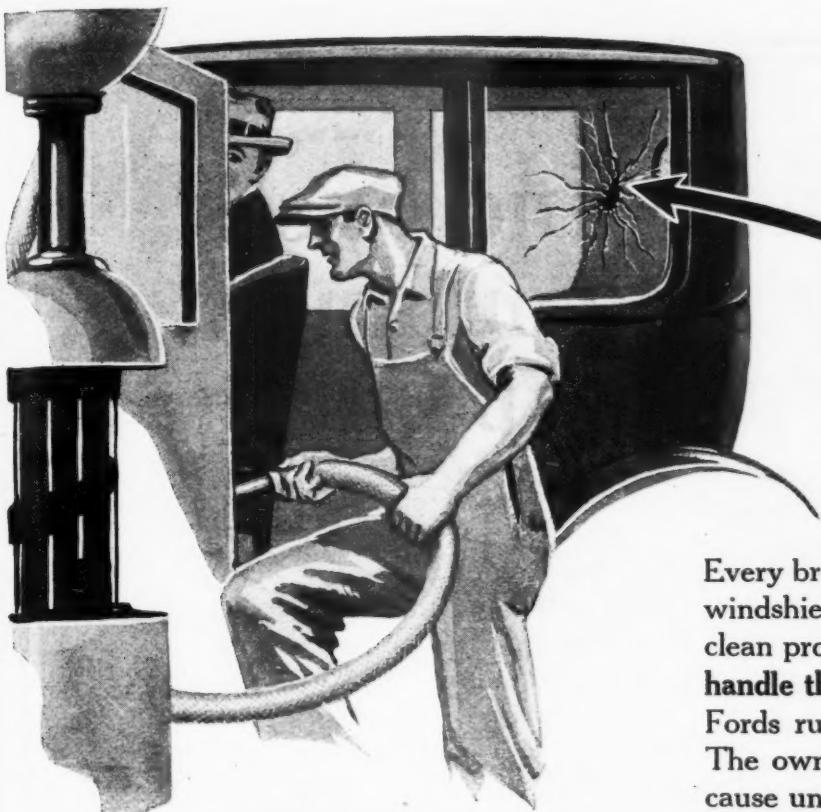
Speed—only $13\frac{1}{2}$ turns on up and $2\frac{1}{2}$ turns on down stroke—fast and easy turning—

Quick return, consisting of only three parts—by reversing handle the clutch shifts automatically.

This gear assembly of *any* gasoline pump is of *vital* importance. Upon its construction depends its *very life*, its *reliability*, and its ease of operation—and to its simplicity, its few parts and the superior construction shown above, are largely due the *enviable reputation* and *wide popularity* of the American Visible Pump.

The American Oil Pump & Tank Co., 1159 Findlay St., Cincinnati, Ohio

Don't Overlook This Profit



CAREFUL PACKING MINIMIZES DANGER OF BREAKAGE

This method of packing was developed to meet the largest objection to glass replacements on the part of jobbers and dealers: breakage. It permits this business to be handled with no greater loss from damage than is found in many other lines of merchandise.

Every broken or cracked glass in the body or windshield of a Ford represents a quick, clean profit for the dealer who is prepared to handle this business. Notice the number of Fords running around with damaged glass. The owners haven't had the work done because until recently it meant a lot of trouble getting the glass cut and fitted.

Porter Redi-Cut Glass solves the problem for the Ford owner and opens the way for the dealer to cash in on this business at a very nice profit. Porter Redi-Cut Glass is cut to exact pattern for Ford windshields and windows with necessary edges finished. It is genuine hand blown triple strength crystal sheet glass, especially adapted to this service.

Porter Redi-Cut Glass comes to Jobbers ready for reshipment without unpacking. Dealers place the glass in stock without unpacking. When a customer needs new glass the dealer can supply him from stock at about half the price he is accustomed to pay for plate glass. No cutting is necessary—therefore no danger of breakage.

Ask your jobber. If he hasn't stocked yet, write to us for price lists and complete information.

**PORTER MIRROR & GLASS CO.
Fort Smith, Arkansas**

Automotive Division

3124 Locust St.,

St. Louis, Mo.



PORTER REDI-CUT GLASS

Selling trucks and buses *is easier* when you know the owner's viewpoint—

Read *Motor Transport*.

It tells you the problems of the Fleet Owner. It tells you how Fleet Owners are making and can make a success of truck or bus operation.

Just as *Motor Age* tells you how to handle your business, so *Motor Transport* tells you how to efficiently operate fleets of motor trucks and buses.

Reading *Motor Transport* will make you a better dealer.

Recommend fleet owners to whom you have sold trucks or buses to subscribe to *Motor Transport*. This magazine will make them more efficient operators.

You will both benefit!

Motor Transport is published semi-monthly, on the 1st and 15th. The subscription price is \$2.00 per year (\$2.50 West of the Mississippi).

Write for a sample copy.

*A Class Journal
Publication*



**Motor
Transport**
FORMERLY COMMERCIAL VEHICLE
239 WEST 39th STREET NEW YORK, N. Y.

new prices

BUNTING
BUSHING BEARINGS

THE new low prices on Bunting Piston Pin and Spring Bolt bushings make high-class replacement at such points so inexpensive that a wide new field for replacement merchandising is opened to the automotive jobber, dealer and service man.

Automotive Jobbers—Write for Stock List 18 showing Piston Pin bushings and Stock List 111 showing Spring Bolt bushings for all popular automotive vehicles.

Cored and Solid Bars of genuine Bunting Bronze sell readily in automotive jobbing house. Write for Stock List 3.



THE BUNTING BRASS & BRONZE COMPANY,

Branches and Warehouses at

New York
245 W. 54th St.
Circle 6844

Cleveland
710 St. Clair Ave. N. E.
Main 5901

Chicago
722 S. Michigan Ave.,
Wabash 9153

San Francisco
198 Second St.,
Douglas 6245

Boston
36 Oliver St.,
Main 8478

Toledo, Ohio



Gears that wear on drivers' ears

Grinding, growling timing gears are a serious irritation to car owners.

Metal timing gears always wear, and worn metal timing gears always are noisy.

Banishing noise from timing gear sets

Celoron Silent Timing Gears never develop snarls, grinds, or howls. They retain accurate timing. In action they are permanently positive and silent.

Celoron Silent Timing Gears are standard equipment on many quality cars. They can be used in any timing gear set.

Celoron is a laminated phenolic condensation material bonded with condensite. It is water-proof, grease-proof.

Celoron is the silent gear material that does not swell.

Keep car owners satisfied

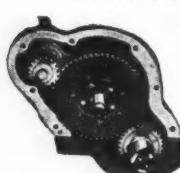
It isn't a long or an expensive job to install a set of Celoron Silent Timing Gears. Drop us a line now and we shall be glad to send complete information on Celoron Silent Timing Gears for your present model.

DIAMOND STATE FIBRE COMPANY

Bridgeport, Pennsylvania

Branches in Principal Cities

Toronto, Canada
London, England



Celoron cam gear



Celoron crank and
generator gears

CELORON SILENT GEARS



Weston's
Model 280
Testing Set
for garages

Build a testing reputation with this Weston set—

The garage that gives the best repair service and the best testing service, quickly gets the business. This Weston model No. 280 enables you to make any electrical test quickly, accurately and efficiently.

This instrument is really a miniature precision volt-ammeter having six ranges 30 and 3 volts—100 milli-volts; and 300, 30 and 3 amperes.

Here are typical tests for the different ranges.

30 volt—determines voltage of battery and of generator.

30 volt—for testing individual storage battery cells.

100 milli-volt—tells the "drop" over segments of the commutator of the motor or generator.

3 ampere—for testing current required by single lights.

30 ampere — shows current required by complete lighting circuit, magnitude of leakage currents, charging rate, etc.

300 ampere—for determining starting current. Locates shorts, grounds, open circuits in starting motor, generator or wiring.

WRITE TODAY FOR BOOKLET H

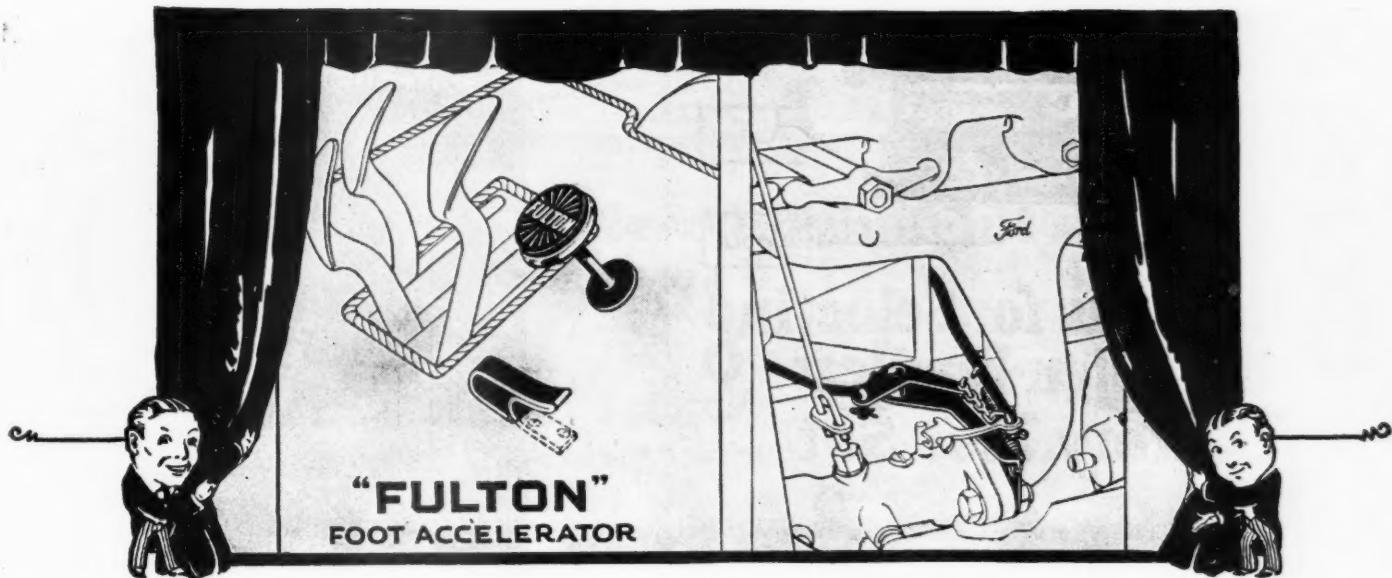
It illustrates, describes and gives prices of all Weston instruments and accessories for automotive service. Write for your copy today.

Weston Electrical Instrument Co.
10 Weston Ave., Newark, N. J.

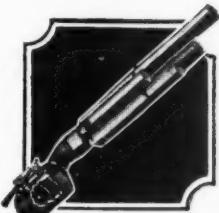
WESTON

Electrical Indicating Instrument Authorities Since 1888

STANDARD-The World Over



Introducing **The FULTON—A New and Improved Foot Accelerator for Fords**



The AERMORE Exhaust Horn

"The signal with a smile"

The last word in motor signalling efficiency. Operates from exhaust — gives a warning that never startles nor offends, can be heard over great distances. Sells to beat the band. *Nationally Advertised.* Get proposition from your jobber. \$7.00 up.

The latest addition to the well-known Fulton line of Quality Motor Accessories—designed and built in the Fulton factory and backed by the warranty of quality and service that makes every piece of Fulton equipment

*An Unbeatable Value
and a Fast Seller Everywhere*

The Fulton Foot Accelerator is of improved design, built for SERVICE FIRST. It is made of extra heavy high-grade material, fully nickelized and equipped with Non-slip Rubber Foot Pedal and Improved Foot Rest. Foot Rest, of more practical design, prevents ankle-cramp, holds foot steady at any degree of depression and thus insures a smooth flow of power over rough roads. Saves gas, simplifies driving. Thoroughly tested. Users say it gives an easier, more positive, more economical control of power than ever before obtainable. Right hand installation avoids interference with pedal pads and magneto post. Easily and quickly installed by anybody. **Price Complete, \$1.50.**

THE FULTON CO.

738 Seventy-fifth Ave. Milwaukee, Wisconsin

Manufacturers of Aermore Exhaust Horns, Fulton Foot Accelerators for Fords, Fulton Electric Windshield Driers, Copper Head Rim Wrenches—Exclusive Sales Representatives for Cooper Cut-outs, Kokomo Wings and Mirrors

**Price
Only
\$1.50**

DEALERS:

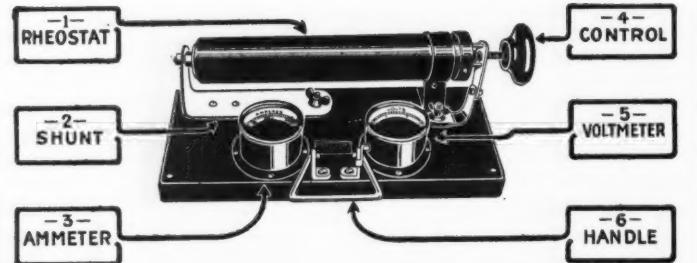
Your jobber has an especially attractive proposition for you.

Don't fail to get it.

THE FULTON LINE

AUTOMOBILE EQUIPMENT

PACE SETTERS OF QUALITY



6 Reasons for Selecting the Allen-Bradley Battery Test Set

1 THE RHEOSTAT is of the graphite compression type, completely enclosed in a steel tube, and practically indestructible. No battery test set will stand the service, acid fumes or overload like the graphite disc rheostat in this test set.

2 THE SHUNT is part of the instrument and likewise indestructible. Its capacity is well over 300 amperes and can be used for testing starter current or other discharges up to 300 amperes.

3 THE AMMETER is rugged and built for abusive service. It is easy reading, reliable, and conveniently placed.

4 THE CONTROL is simple, with a wheel which regulates the discharge from nothing to 300 amperes with stepless control and without contactors. Acid fumes do not affect it and corrosion is unknown in graphite discs.

5 THE VOLTMETER together with convenient test prods furnished with the instrument and also the Allen-Bradley battery test chart tell the whole story about the battery at a glance and without question on the part of the customer.

6 THE HANDLE makes the test set convenient and portable, an unusual feature in battery test sets. Take the test set to the battery and not the battery to the test set. Order your test set, today. Be up-to-date.

Allen-Bradley
TYPE L-2502
HIGH-RATE DISCHARGE TEST SET

Allen-Bradley Co.
Electric Controlling Apparatus

281 Greenfield Avenue

Milwaukee, Wisconsin

We are looking for more information about a high-grade, medium-priced test set. Please send us, without obligation, full information about the Allen-Bradley test set and test chart.



NOW— Leather Fan Belts

NOW is the time to sell Graton & Knight Leather Fan Belts. Everywhere you read "Nothing takes the place of Leather." More than ever before drivers are coming to know that for honest wear, for grip and pull, for a belt that will hold its shape, that will give perfect performance and keep it up day after day and month after month—"Nothing takes the place of Leather."

This display case was designed to sell Graton & Knight Leather Fan Belts for you—designed to tell your customers that you have fan belts that they put on and forget.

A Graton & Knight Leather Fan Belt is forty per cent and up more efficient than any fan belt made of a substitute for leather.

When you write your jobber about the Graton & Knight Display Case, ask about the Graton & Knight Link "V" Fan Belt too. It is as indestructible as a fan belt can be made, noiseless in operation and easy to make endless. Write your jobber now while you think of it.

GRATON & KNIGHT
WORCESTER, MASS.



Nothing takes the place of Leather



This Modern Equipment speeds up car washing and saves money!

A GREAT time saver—this Gaylord Ideal Overhead Washer. It swivels around in a 9 foot circle, allowing the car washer to reach any side without dragging the hose. The counterbalance makes swinging easy.

The water control is at the nozzle of the hose—not in the overhead. Therefore, no danger of overhead leakage! Automatic water control at the end of the hose makes it an efficient water saver. The water flows only when it's wanted, that is, when the washer has his grip on the nozzle.

The electric light moves over the job and gives splendid illumination for night washing. Electric contact is made by a rotor brush, so that the washer swings freely in all positions.

Priced lower than any other overhead washer with water shut off mechanism. Model No. 4, illustrated, sells for \$34. Order through your Jobber.

Write now for your copy of our booklet, "Beating the Water Meter"!

GAYLORD IDEAL Overhead Washer



Saves Water Automatically

The "Little Giant" Water Saver used at the end of any $\frac{3}{4}$ in. hose STOPS WATER WASTE. It requires no operating! For the water to flow, you simply grip the nozzle. When you let go, the valve closes AUTOMATICALLY! The red rubber hose nozzle can't scratch the car. Rigid construction throughout; metal parts of brass, reinforced washers. List price is \$3.00. Your Jobber can supply you.

THE GAYLORD MFG. CO.
Paterson, New Jersey

GAYLORD LITTLE GIANT Water Saver

Jobbers: A "Little Giant" sent FREE to bona fide Jobbers on request. A sales proposition of unusual merit.

When the Motorist Goes Shopping

When the motorist goes shopping he does most of his buying at the gasoline pump. Once at the pump he not only buys gasoline and oil, but many accessories that are called to his attention by the wide-awake dealer.

Thousands of motorists are shopping every day at Gilbert and Barker gasoline pumps all over the country. These pumps are used by dealers and patronized by motorists because they give fast service, are safe in operation and continually accurate in measurement.

One of these Gilbert and Barker pumps at your curb will advertise your business. It will introduce you to more customers and bring faster turnover and bigger profits from your accessory stocks.

Get prices and information on one of these Gilbert and Barker gasoline pumps from your oil man. In case he cannot supply it just write us direct, mentioning his name and address.

GILBERT AND BARKER
MANUFACTURING COMPANY
PUMPS AND TANKS FOR THE OIL TRADE
SPRINGFIELD, MASS., U.S.A.



TWELVE SIZES

will equip any car manufactured during this and the past Seven Years.



"Perfection" Pedal Pads
make more money for the Dealer!

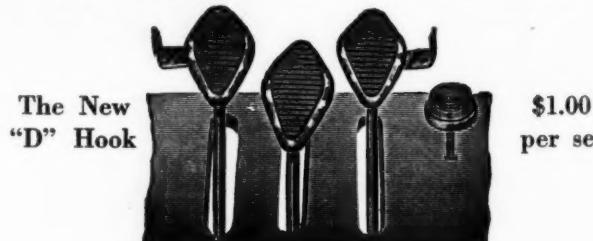
A small stock to carry—extremely popular prices—quicker turnover—a size for *every* car—no bolts—no drilling—just bend the prongs and they're on to stay.

"Perfection" Pedal Pads comprise a line so complete that you can't miss a sale. They are very well made—handsomely finished—sell fast—and build up your profits.

From the lowest to the highest priced car—you satisfy your customers with this standard line.

Write for catalog and discounts today.

Auto Pedal Pad Co.
318-320 West 52nd St. New York City



Provides a comfortable rest for the foot and relieves muscle tension. Attaches without bolt or drilling—just bend the prongs. A great convenience and a rapid seller in a big market. \$1.00 per set.

This Display Board, Accelerator and Starter Pads, 12 assorted sizes, \$6.00



These pads are made in sizes to fit accelerator or starter for every make of car. Strong, well designed, heavy rubber pads set in nickel frame. Makes control of the throttle easier and more certain. Price 50c. each. Stock only 12 sizes, and you can equip any car that has been manufactured during this and the past Seven Years!

"PERFECTION" PEDAL PADS

Insist on the Pad with the Nickel Frame



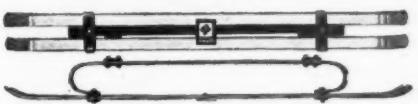
The DUVEX at \$12⁵⁰

A value never equaled before. Its broad surface gives unusual protection, and its finish, in either nickel or black enamel, unusual beauty. A wonderful bargain.



\$10 The Barrier

For small cars the neatest bumper made; either nickel or black enamel finish. Light in weight but strong and sturdy and a splendid safeguard.



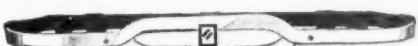
\$17 The 1 3/4 Duvex

A handsome bumper of unusual quality. The 1 3/4 inch bar is trim in appearance, with the back bar reinforcing the already strong construction in an unusual way. Especially for medium weight cars.



\$18 The Duo-Convex

A graceful, beautiful finished bumper of unusual lines. The streamline curve gives unusual protection and distinction in appearance.



**\$16.50 and \$24
The Sport Duplex**

For sport cars, the handsomest most useful bumper made. Snappy in lines and finish. Either of the 1 3/4 inch or 2 1/4 inch sizes is a wonderful protection and a beautiful accessory.



\$13.50 Nickel Duplex

A seven inch wall of oil tempered steel beautifully finished, splendidly designed—by many considered the greatest bumper in the NEW ERA line.

"BETTER"

A Different Selling Punch!

THERE is more for your money in BETTER bumpers, no matter what style you select.

We know how to make bumpers. We know how to select materials. We train expert workmen the BETTER way in our plant.

For years we have put the best there was in us into this business. Expert designing and manufacturing has resulted. Each BETTER bumper is oil-tempered, heat treated, carefully tested and then another inspection is made before it is considered good enough to bear the NEW ERA name plate.

Such care has resulted in a reputation and a following of which we are proud. We try to live up to every word our friends say about us. That is why, we have for years given that

AMAZING LIFE LONG GUARANTEE

"—a new one free if you break or damage one, no matter what the cause."

Motorists buy NEW ERA BETTER Bumpers confidently because of that policy. It is more than a selling point. It is an eight year old fact. A fine feeling of security goes with a bumper which the manufacturer dares to back in such a complete way.

Both the dealer who sells, and the motorist who buys, appreciates it.

NEW ERA SPRING & SPECIALTY CO.

Smalley Daniels, President

Grand Rapids

Michigan

\$20⁰⁰



The FULL-BACK

The last word in protection—and looks! Reinforced with oil tempered truss construction, handsome in design and safe in the hard crash! The Fullback with truss construction for Fords, Chevrolets, Overlands, etc., is a wonder.



Show them you sell Columbias

THE largest dry battery advertising campaign ever undertaken is now under way, helping Columbia dealers sell Columbia Batteries. All the leading magazines that reach battery buyers are telling them that "Columbias last longer." Your customers are constantly reading about Columbias. You can make your investment in Columbias highly profitable by telling folks that you sell Columbia Batteries. They'll be looking for a place to buy them, not only for general purposes, but for radio too!

Display Columbias—Ignitors and Hot Shots. At least once a month have an entire show window for Columbias. Keep them on display inside all the time. Use Columbia advertising signs. People are buying more Columbia Batteries than ever before. Tell them your store is local headquarters for Columbias. You can multiply your battery sales by prominent Columbia displays.

NATIONAL CARBON COMPANY, INC.
New York San Francisco
Canadian National Carbon Co., Limited
Factory and Offices: Toronto, Ontario

Columbia Dry Batteries *-they last longer*

for—

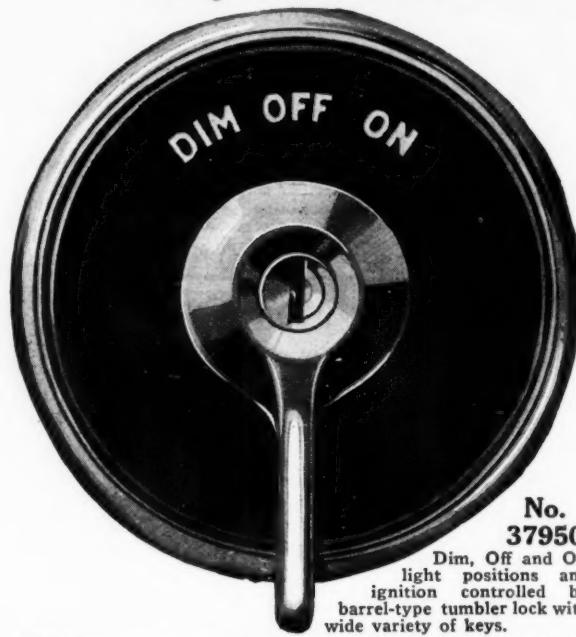
Gas engine ignition
Tractor ignition
Firing blasts
Starting Fords
Doorbells and buzzers
Ringing burglar alarms
Protecting bank vaults
Calling Pullman porters
Running toys
Telephone and telegraph
Lighting tents and outbuildings
Motor boat ignition
Heat regulators
Electric clocks
Radio "A"



This New



Universal Switch Only \$3.00



No.
37950

Dim, Off and On
light positions and
ignition controlled by
barrel-type tumbler lock with
wide variety of keys.

CUT your overhead on switches in half by stocking this new Basco Universal Switch instead of the wide variety of ordinary switches required for a complete stock. This handsome switch fits most makes of cars and trucks—magneto or battery ignition, single or double wire system, resistance or two-bulb selective dimming. Terminals are plainly marked on back—no guess-work or experimenting when you install it. Just hook the leads to their terminals and fasten switch to dash. The Basco Universal always works right—in fact, we guarantee it will cost you nothing to "service". Costs your customer less to buy and costs you less to stock, sell and install—all of which means more profit to you.



No. 37880 — Same as
37950 with extra terminal
for separate control of
side, tail or parking light.

OTHER BASCO PRODUCTS: Starting, Lighting and Ignition Switches; door handles; generator cutouts, regulator cutouts.

Briggs & Stratton Co.
Milwaukee, Wisconsin



Increased Stock Efficiency With Decreased Investment

You can install the same Huetter Fly-Wheel Gear Band on cars having the same number of teeth on their fly-wheels, regardless of which side the starter pinion enters from. This is due to the *universal* and *interchangeable* pointing and means that you can cut down your investment in stock and stock floor space.

Huetter Gears are machined to Bendix Drive Specifications which assures easy, quiet, positive meshing. They are made of special alloy steel and electric welded at the seam, which is just as important to their lasting qualities as the pointing.

Huetter's shipments get under way within the hour. Rush orders are sent to you parcel post by distributors located at points of advantage throughout the country.

ORDER DIRECT

Write now for Catalog Price List

Huetter's Fly-Wheel GearBands

Manufactured only by

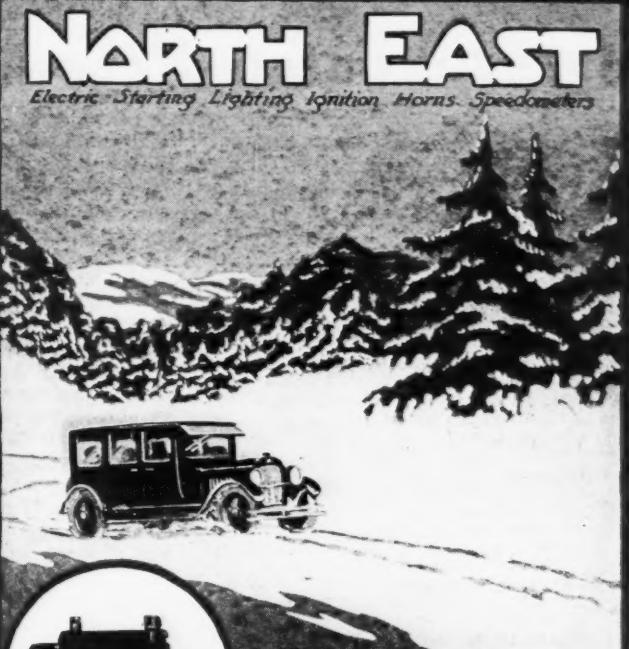
HUETTER MACHINE & TOOL CO.

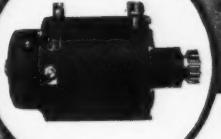
546 Kentucky Ave.

INDIANAPOLIS

NORTH EAST

Electric Starting Lighting Ignition Horns Speedometers



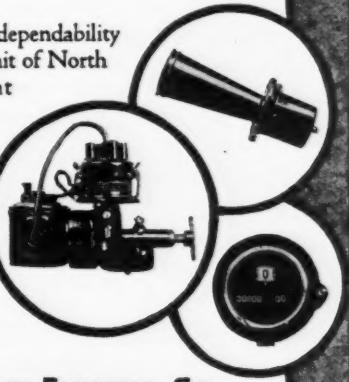


**USED WHERE
DEPENDABILITY COUNTS**

THE long established dependability of North East Starters, Generators, Ignition, Horns and Speedometers gives the North East equipped car owner the same sense of security in winter driving as in summer.

And back of this dependability built into every unit of North East Equipment stands North East Service Inc. with a world wide organization to service the interests of North East owners wherever they may be.

NORTH EAST ELECTRIC CO.
ROCHESTER N.Y. U.S.A.



Manufacturers of Automotive Equipment for

Dodge Brothers	Reo	Yellow Cab
Yellow Coach	Fifth Ave. Coach	Yellow Sleeve Valve
Philadelphia Motor Coach	Berlet	Delage
Sterling Marine Engine	Fay & Bowen	White
Holt Mfg. Co.		Four Wheel Drive

Official North East Service Organization

NORTH EAST SERVICE INC.

Rochester	New York	
Atlanta	London	Kansas City
Chicago	Paris	San Francisco
Detroit		Windsor, Ont.

Service Stations in cities of importance throughout the world.
Directory of service stations mailed upon request.

NORTH EAST Genuine PARTS ARE PUT OUT IN DISTINCTIVE YELLOW BOXES AS A PREVENTATIVE AGAINST SUBSTITUTES

USE ONLY Genuine SERVICE PARTS



Consolidated Resources Over \$66,000,000

DIRECTORS

A. E. DUNCAN, Chairman of the Board, Baltimore
R. WALTER GRAHAM, Comptroller, City of Baltimore.
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THOS. H. GAITHER, Real Estate and Investments, Baltimore.
S. H. LAUCHHEIMER, Attorney, Baltimore.
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R. HOWARD BLAND, President, U. S. Fidelity & Guaranty Co., Baltimore.
DAVID R. FORGAN, President, National City Bank, Chicago.
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LOUIS K. LIGGETT, President United Drug Co., Boston.
W. CAMERON FORBES, Member J. M. Forbes & Co., Boston.
CHARLES B. WIGGIN, With Hayden, Stone & Co., New York.
E. C. WARHEIM, Vice-President, Baltimore.

Our Company began business June 15, 1912, with \$300,000 cash capital. Through earnings and numerous increases of capital we now have over \$15,500,000 Cash Capital, Surplus and Undivided Profits.

Our business is the purchasing of open commercial accounts, notes, acceptances, drafts, instalment and motor lien obligations, all of which are secured by a substantial margin or by lien, the average payment being in about 90 days, so that our assets are liquid and subject to but little depreciation. Our average outstanding Motor Lien Retail Time Sale obligation is less than \$250, secured by lien upon the car.

Including our affiliated Companies, for the eleven months ended November 30, 1923, our gross purchases of receivables were \$160,671,984; our average daily cash balances were \$8,919,297; our daily average of cash employed was \$59,111,574; and the Consolidated Resources of our Company and its Affiliations are now over \$66,000,000.

On November 30, 1923, our Companies were giving employment to 1052 persons, of which 404 were at Baltimore; 71 at San Francisco; 229 at New York; 47 at Montreal; 202 at Chicago; and 99 at New Orleans.

Our Company has made a substantial profit every year. Each issue of our Capital Stock has been underwritten by well known Investment Bankers and has from the first been listed on the Baltimore Stock Exchange and has a ready market.

Our credit is firmly established throughout the United States and Canada with a large number of the biggest and best banking institutions.

COMMERCIAL CREDIT COMPANY

Cash Capital and Surplus \$15,500,000

BALTIMORE

SAN FRANCISCO

Affiliated with

Commercial Credit Corporation
New York Montreal

Commercial Acceptance Trust
Chicago

Commercial Credit Co., Inc.
New Orleans

THERE ARE TWO Factors that determine
tion as an advertising medium.

Editorial excellence will indicate its influence with
its readers.

Membership in the Audit Bureau of Circulations
indicates its business ethics and methods.

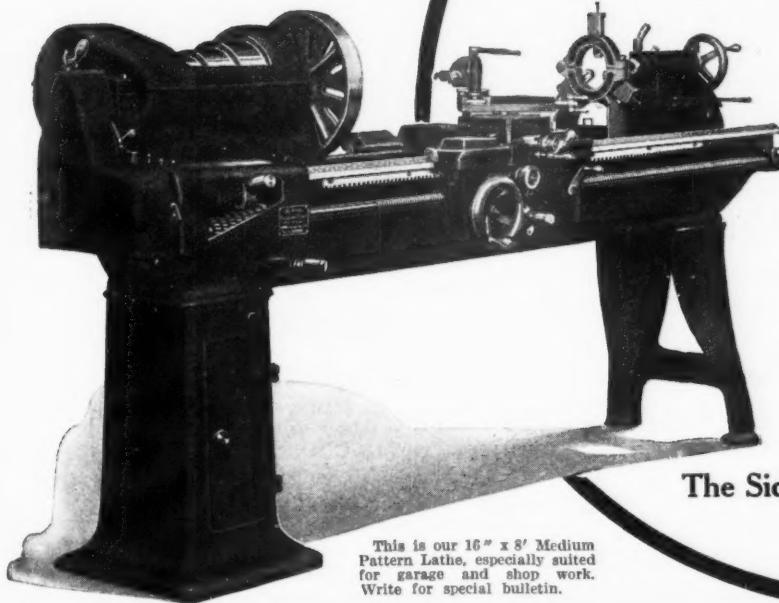
The first shows whether the paper is worth reading.
The second shows how many people read it.
In both the advertiser is vitally interested.

MOTOR AGE invites the closest scrutiny. Its
A. B. C. report is accessible to advertisers.

Pocket ALL the Profits!

Why "Split" With the Other Fellow?

When you send lathe jobs to outside shops you are simply "splitting" profits. A Lathe in your own shop would enable you to handle jobs which you are now obliged to send to the other fellow,—and would boost your profits accordingly.



This is our 16" x 8' Medium Pattern Lathe, especially suited for garage and shop work. Write for special bulletin.

Sidney Medium Pattern Lathes were designed and built to meet the needs of the garage and repair shop field,—and yet they don't cost you a small fortune. You can get them in a variety of sizes from 14 inch to 24 inch swing, and in lengths from 6 to 20 feet. Also they are equipped with many special features and attachments which are ordinarily found only on the more expensive machines.

Write today for the story of Sidney Lathes for garage and repair shops, —a line of machines that gives you the most for your money.

The Sidney Machine Tool Co.

Dept. 1502

Sidney, Ohio

15 FEET OF BEAM TRACK

Here it is
*Just the Thing for
Your Shop*

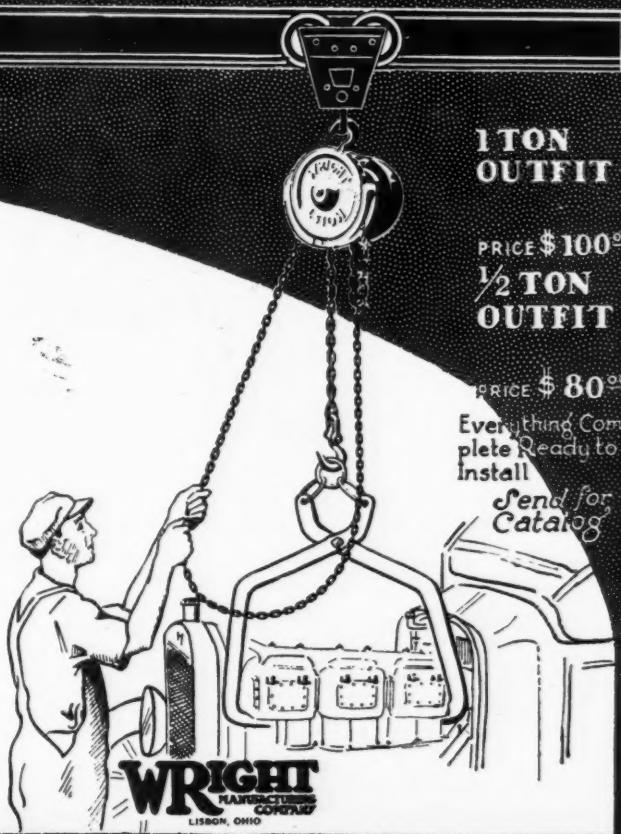
DON'T—

Don't Fuss & Worry with Blocking up a Car
Don't Work Down in a Damp Pit
Don't Take Time to lift and
Then move the Car

Hook her to a
WRIGHT

HIGH SPEED
HOISTING & CONVEYING OUTFIT

WRIGHT
MANUFACTURING COMPANY
LISBON, OHIO





**TWO SHORT MONTHS AGO
We Announced
THE DUNN HOT DOME
SHORT MANIFOLD**

For CHEVROLET SUPERIOR and 490

Since that time we have been literally swamped with orders and inquiries coming from every State in the Union, Canada and Mexico. Chevrolet owners clamored for it. Dealers tested a sample and then came back with orders for a dozen, twenty,

fifty. Many dealers have adopted it as standard equipment, installing it on NEW CARS before placing them on the floor. Hundreds were sent out on a 30 day trial offer, but not a single one has been returned for any reason whatsoever.

REPEAT ORDERS ARE WORKING US OVERTIME, but we are shipping promptly.

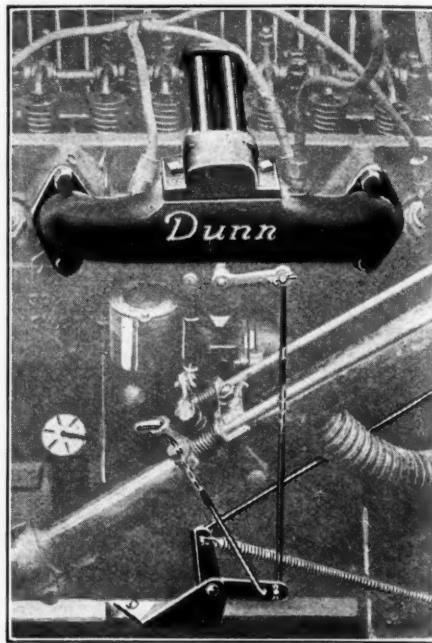
The Need Is Great. The Principle Is Right. Results Are Astonishing

Users report a sweet running, powerful, flexible engine, free from slugging and coughing even at 30 degrees below zero, and mileage as high as 39 to the gallon. Carbon deposit is lessened, and fouled spark plugs and diluted cylinder oil are unknown.

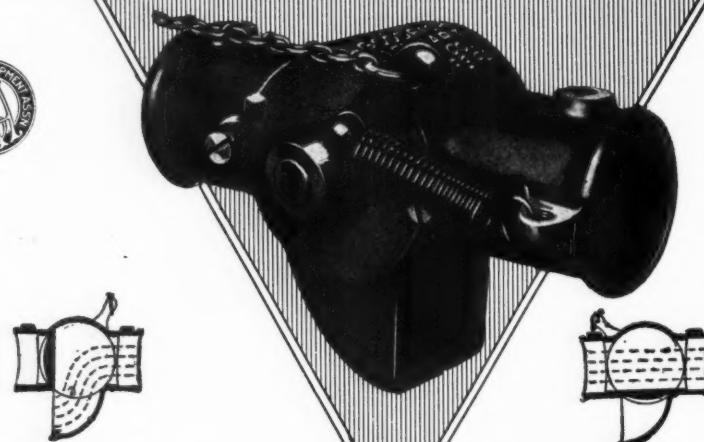
A WONDERFUL ARMY OF CHEVROLET AND ACCESSORY DEALERS is falling in line, and cashing in on the liberal DUNN discount. The extreme low retail price of

\$7.50 is made possible only by immense quantity production. If not at your dealers, we ship direct to owners upon receipt of price or instructions to ship C. O. D. Money back, if dissatisfied.

Dunn Manufacturing Co.
Clarinda, Iowa, U.S.A.
222 Main Street



It's the Goodrich Design that Car Owners Like



OPEN: The valve's heavy knife-like edge overcomes a great cutout weakness. It shaves off all soot deposits inside the cut-off.

CLOSED: The valve fits snug and close. Cannot fit otherwise. No rattles. No escaping gas to cause annoyance.

Goodrich
MOTOR TESTING
Valve
(Replacing Old Style Cut Out)

And now—

The Goodrich Dash Control

This new Goodrich device enables driver to operate his cutout by hand from driver's seat.

You can open the cutout entirely or partially. A half turn by hand locks Dash Control in any position.

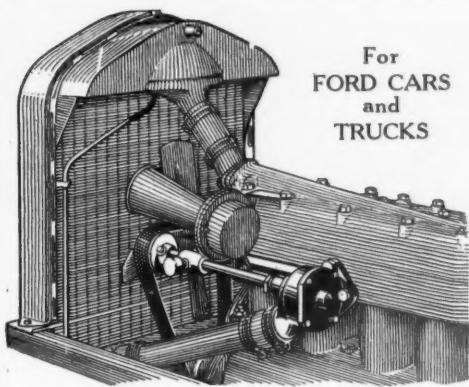


No foot work. No guess work as to whether motor is running while waiting for "Go" traffic signal.

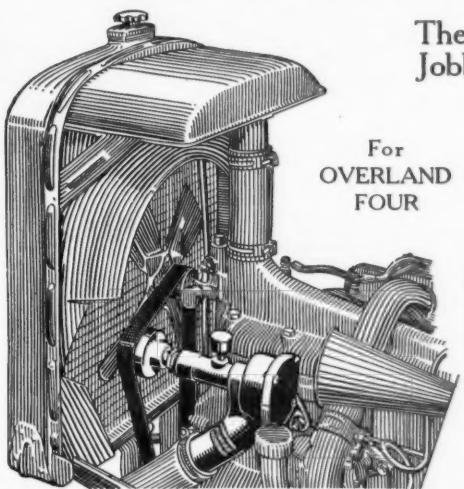
Goodrich Dash Control furnished with Goodrich Motor Testing Valve or separately if desired.

Goodrich Motor Testing Valves at all good jobbers as always — and in addition, this new Dash Control.

Goodrich-Lenhart Mfg. Co.
Hamburg, Pa.



For
FORD CARS
and
TRUCKS



For
OVERLAND
FOUR

The
MILWAUKEE
CIRCULATING WATER PUMP.

Is the Pump that Motorists Demand

Orders Already Booked for 1924 Delivery Require us to Ship a Pump Every 9 Minutes of every work day, throughout 1924.

This Is Just a Starter from Jobbers and Dealers who know they're going to have a big run on Milwaukee Pumps.

These Things Show the Continually Increasing Demand, for Jobbers and Dealers Buy Only What the Public Wants

Sell the
"MILWAUKEE"
for the
FORD CAR OR TRUCK
or
OVERLAND FOUR

and know that you're giving them the best—by test, the Recognized Standard Water Circulating Pump.

Price complete, with extra Quality
Fan Belt \$8.00
In the Far West..... \$8.50

Every Ford Needs the
MILWAUKEE
Flanged Replacement Pulley
for the Ford
Crankshaft
Keeps the belt
on the pulleys
and the oil off
the belt.



Price
\$1.00

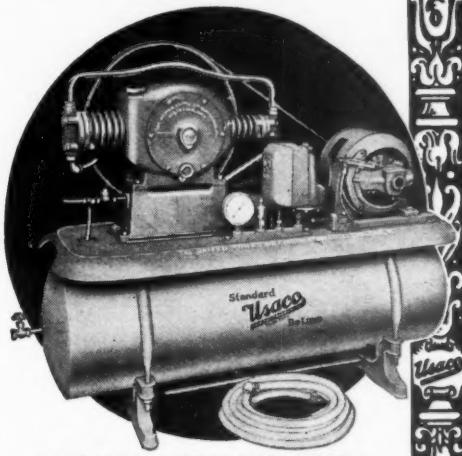
We also manufacture a Milwaukee Pump for the Fordson Tractor.
Dealers, send your order through your jobber.

CRAMER MFG. CO., 387—9 Tenth St., Milwaukee, Wis.

Sales Representatives—C. N. & F. W. Jonas.
Foreign Sales Dept. 25 Broad St., New York, N. Y.

A New *Usaco* Air Compressor

Choose from Several
Equipments all Bearing
the New Compressor Unit



"STANDARD" DE LUXE

Displacement, $3\frac{3}{4}$ cu. ft. per min.;
Motor, $\frac{3}{4}$ H. P.; Dimensions, 52x20x39
in.; Tank, 30 gallon capacity for 200
pounds working pressure; Net weight, 420
pounds.

The World's Best Air Compressor Made Better Than Ever Before!

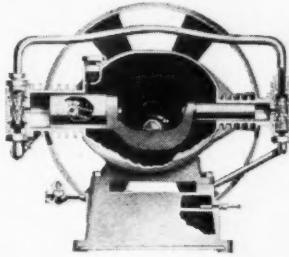
SOme years ago this company Pioneered the way by introducing an air compressor of new design which has since become generally recognized as the unquestioned leader—a machine that has been widely imitated but never equalled.

Now, we are blazing another trail in the introduction of a new machine—the same in fundamental principles but as far superior to the previous compressor as the original model was then in advance of the field.

Of definite interest are: The Plate Valves of new and simplified design, which result in increased efficiency; the Regulated Pin

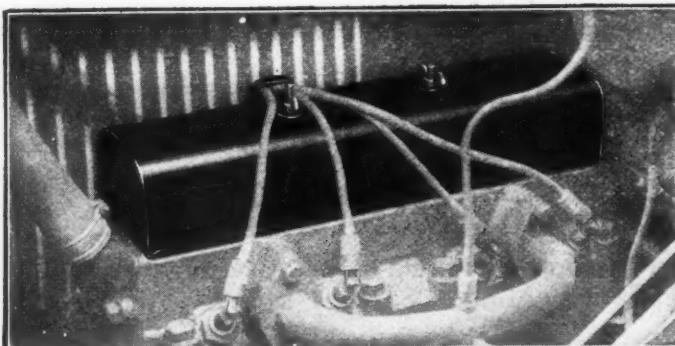
Splash Oiling System, a greatly improved method of lubrication; the Rigid Piston Assembly, an exclusive feature that results in long life; the Improved Copper Intercooler of original and simplified design and other features that make it, without question, the most efficient, most quiet air compressor ever designed.

Air compressor users, tire dealers, filling station operators and jobbers, don't buy a single compressor until you get the complete story of this remarkable machine in the new catalogue just off the press. Send for it today.



Please send literature on new
compressor, also new on Cat-
log adver-tised in Motor
Age to—name in Motor
ten in margin writ-

The United States Air Compressor Co.
5304 Harvard Ave., Cleveland, O.



The HAYES = Silencer and Oiler for CHEVROLETS

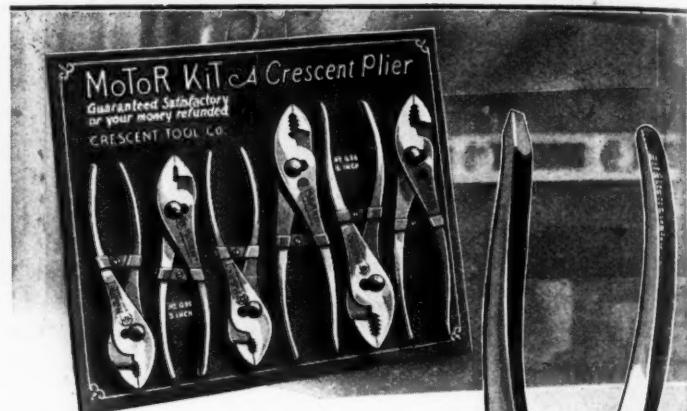
If you drive a Chevrolet then you actually need the Hayes Silencer and Oiler not only because it quiets all tappet noises but because it is the only oiler whereby the motor head can be properly lubricated without removal. Protects surface working parts against dust. Eliminates oil can routine. Protects motor head from water and prevents any open valve stem from freezing in cold weather. Made of the best materials. Cannot get out of order and will last indefinitely. The best investment you can make for a Chevrolet. Send for prices and particulars while the weather is still cold.

"a Hayes Product"

Write for Prices and Details

HAYES-IONIA SERVICE CO.

Dept. 62, Muskegon & Richmond, Grand Rapids, Mich.



Now Ready "No. DB8"

Accessory and hardware men like Display Board No. DB7. It is selling a lot of Thin-Nose Pliers because it keeps them out where customers can see them—and seeing means buying.

DB8 will do the same for the 5 and 6 inch sizes of MOTOR KIT pliers, retailing at 50c each. Ask your jobber.

CRESCENT TOOL COMPANY
Jamestown, N. Y.

Originators of the Crescent Wrench

CRESCENT TOOLS



Detroit Tire Lock

All thought concerning theft of spare tires disappears immediately after an owner puts on a Detroit Tire Lock. It is evident that this lock cannot be picked or broken off by a would-be tire thief.

Write at once for sales plan and discount sheet

DETROIT CARRIER & MFG. CO.

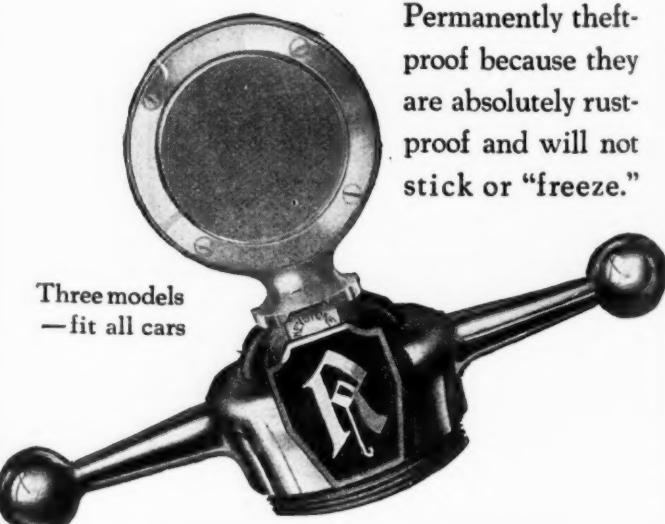
8639 Conant Road, Detroit, Mich.



\$5.00
List

KEYSTONE THE GENUINE RADIATOR CAP

With Initials, Monograms and Emblems



Three models
—fit all cars

Permanently theft-proof because they are absolutely rust-proof and will not stick or "freeze."

THE NORLIPP COMPANY
568 W. Congress Street CHICAGO

DOES SOLDERING IN ONE QUARTER THE USUAL TIME

TORIT TORCH OUTFIT No. 13

Whether the job is lead burning, battery sealing, fender straightening, radiator soldering or loosening a rusty or corroded nut, the Torit, No. 13, torch is always ready at a second's notice to serve you, and the price is wonderfully low. It is handy for soldering tinware, babbiting, joining light tubing, aluminum soldering, soldering electrical connections etc.

USES ACETYLENE ONLY

A splendid use for discarded auto acetylene tanks. Many owners make the Torit, No. 13, pay for itself in a single day. Torch, with 4 different tips, soldering copper, 5 ft. tubing and connection for auto acetylene tank.

\$7.50

ORDER YOUR TORCH TODAY
St. Paul Welding & Mfg. Co.
169 W. Third St., St. Paul, Minn.

New Junior Assortment Cotter Pins

The only practical and portable arrangement for quick, counter Cotter Pin sales—and the best Cotter Pin Assortment for Garages and Repair Shops. The cases are very durable and covered with black leatherette, neatly marked—both lids strongly reinforced where hinged. When closed Cotters cannot be shaken out of their compartments.

We manufacture all sizes of Cotter Pins, Regular Assortments in screw top boxes and special assortments as specified.

ORDER FROM YOUR JOBBER
WESTERN WIRE PRODUCTS COMPANY
ST. LOUIS, MO.

Price \$2.50

In Canada
Plain model—\$3.50
Radium model—
\$4.50

The MINUTE Biggest Seller in years

The greatest clock value ever offered the trade.

And guaranteed by one of the largest manufacturers of this type of movement.

Minute Meter is a dust-proof—vibration-proof—accurate clock at a remarkable price made by men who have had 40 years' clock making experience.

Minute Meter fits flush on any dash—wood or steel of any thickness—quickly and securely.

You've got to see this little clock to appreciate it. Send in a small order now. You'll want more.

If your jobber can't supply you now, write direct.

The LUX CLOCK MANUFACTURING CO., INC.
Waterbury - Connecticut - U.S.A.

C-J Profit Producing Lathes

Are Pioneers in their field, being the first modern Lathes to be adopted generally in auto service stations. A standard make, one of the oldest in the field, backed by many years successful service. Known and in use the world over.

13 inch; 15 inch; and 16 inch swing Quick Change Gear or Semi Quick Change Gear. ACCURATE; DURABLE; SIMPLE TO OPERATE.

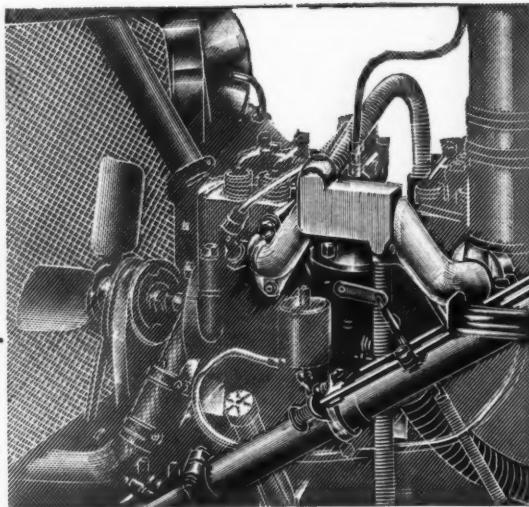
Every worthwhile feature but not one superfluous feature is embodied in these quality Lathes.

HONESTLY BUILT **HONESTLY PRICED**

Write today for Special Garage Bulletin "M.A."

The Carroll-Jamieson Machine Tool Company
Batavia, Ohio.

Thrifty—Every Drop Works



Economy Manifold for Chevrolet

The Economy manifold is designed especially for the Chevrolet. It is a practical, thrifty addition.

Easy starting, more miles to the gallon (often as high as 32 miles), less choking, warms up in two city blocks—factors that appeal to the owner.

It is carefully made and easy to install. No fussing—careful.

AUTOMOTIVE PRODUCTS CO., Clyde, Ohio

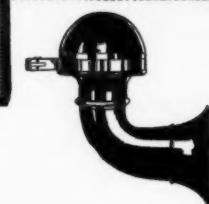
ful machining makes every one a perfect fit. Made of No. 12 aluminum. In the retail price of \$12.00 there's a husky profit.

Point out these Economy advantages to your customers. Further information will be gladly furnished.

Write today for discounts.



Bosch



The Robert Bosch
Horn—
To Hear It
Is To Want It!

It is much better to have

The Robert Bosch Selling Franchise NOW than to wish you had it—LATER!

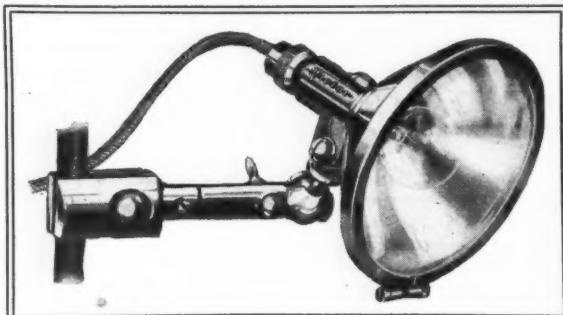
There is some good open territory.
Write or wire at once.

Robert Bosch Magneto Co., Inc.
OTTO HEINS, President

109 West 64th Street

New York

Chicago Branch: 1302 South Wabash Ave.
Service Stations in Principal Cities the World Over.
The Genuine, Original Bosch means Robert Bosch only.



VICTOR No. 100 Spot Lamp

"FIREFLY"

The Victor No. 45 "Firefly" Parking Lamp is a power saving little sentry that mounts on top the left rear fender. It shows two bright jewels—white forward and red to rear.

This lamp is the champion big seller of the Victor Line. It is attractive to the eye—made like a piece of jewelry and is fascinating to handle.

It is practical. It is sturdy. It is built to fulfill the purpose for which it is intended—to throw a strong beam of light in any direction except into an approaching motorists' eyes and to stay put, where put.

It is a double shell to prevent sweating and rust.

Order by name and number—Victor Arrow (100N) all nickel, Victor Pathfinder (100BN) black and nickel. Specify No. 103 all nickel for closed cars.

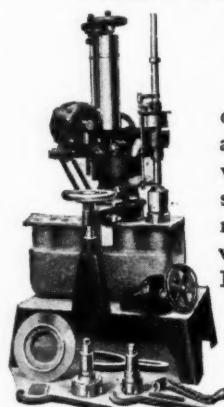
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THE CINCINNATI VICTOR COMPANY
714 Reading Road, Cincinnati, Ohio

STORMIZING— The Better Method of Cylinder Renewing

ARE YOU LOSING MONEY ON EVERY JOB?



You are not making big profits on every overhaul job unless you are handling the cylinder renewing work yourself. There are big possibilities in cylinder service, but many shops are not taking full advantage of these opportunities. Every overhaul job requires some kind of cylinder service.

Get this extra profit by installing this equipment now.

STORM EQUIPMENT Handles All Cylinder Work

This latest approved factory method adopted to service work conditions enables you to handle all cylinder work. The accuracy and efficiency of the machines ensure the highest quality work while the automatic operation features save many valuable hours.

The Storm Book: "Modern Cylinder Methods" explains fully the secret of quicker shop turnover and bigger profits. Send for it today.

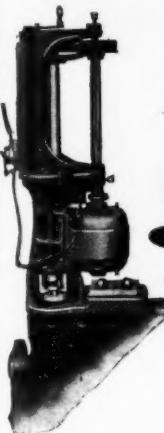


STORM MFG CO

406-A Sixth Ave., S.
Minneapolis, Minn.

Double Garage Profits

Model B with
1/2 H. P. Motor
and many other
improvements.



Simplicity

Portable
Cylinder
Reborer and
Grinder

The only portable machine that both rebores and regrinds cylinders. Any mechanic can operate it, any standard 110 or 220 volt electric current runs it. Guaranteed to do work equal to big stationary grinders costing five times as much. Complete equipment furnished including advertising signs, circulars, movie slide, ads for your newspaper. Starts business your way at once.

Pat. Mar. 16,
1915; May 11,
1920. Other
patents pend-
ing.

SIMPLICITY MFG. CO.

Dept. C, Port Washington, Wis.

Export Office—550 West Washington, Chicago, Ill.

Easy Terms—
Free Trial
The Simplicity
pays for itself in
a short time.

**District Men
Wanted**
for open territory. Attractive proposition for those who can qualify. Write for full particulars.



SPECIAL GARAGE MODEL

While this garage model was being built our engineers were making a thorough study of the conditions under which a portable crane must work in a garage. As a result nothing was overlooked. The individual requirements of every shop and garage were provided for. You will recognize this garage crane as a business-like piece of equipment for your shop. One man can do lifting with it that would otherwise require four or five men. All parts are built oversize to allow a liberal margin of safety.

Write for catalog and complete information

Canton Foundry & Machine Company
Canton, Ohio

New York Office 203 E. 15th St.

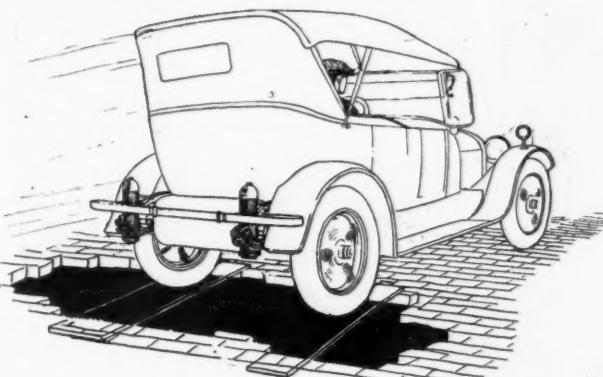
CANTON
PORTABLE
CRANE & HOIST

LOMAR
SHOCK ABSORBERS
*Just Like Gliding
Over the Most Abrupt Rut*

One demonstration—one ride on Lomar Shock Absorbers and they are sold tight. They positively prevent jars and shaking up. They give the car occupants that "Floating through air" feeling.

Shall we send you our proposition?

LOMAR MFG. CO.
Middletown, Ohio



**Keep that
Spark
Coming!**
Use the famous "775" insulator

You can't expect a car to roar with delight when it's hitting on three cylinders. Neither can you expect a spark plug to give even the slightest resemblance of a spark when the insulator has gone bad.

"775" keeps the spark coming all the time. It is scientifically made to resist heat best. That's why it lives longest.

Don't pick out spark plugs at random. The better spark plug makers have learned that "775" insulator means a better plug, without increasing the cost.

Frenchtown Porcelain Company,
Trenton, N. J.

"Established 1910—
Busy ever since!"

"775"

STANDS THE TEST

NEW!

Tanpac is the Fibre Sheet Packing you have needed for a long time. Tough as rawhide, light in weight; easy to handle. Contains no rubber or asbestos. Recommended for automobile gaskets in use against gas, oil, water and grease. (Use Tenax Compressed Asbestos Sheets in contact with extreme heat).

Made in 1/64th, .020, 1/32 and 1/16th inch thickness—in 36 inch rolls or in sheets. A reliable, economical packing.

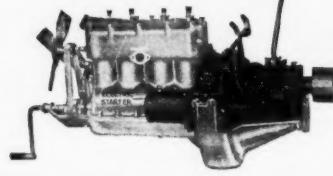
Buy from your jobber or write us direct.

Advance Packing & Supply Co.,
810 Washington Blvd.
Chicago, Ill.

TANPAC

SIMPLEX TRANSMISSION

for Ford Cars and Trucks

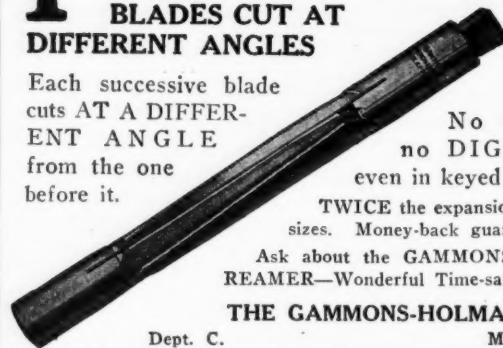
Three Speed
Sliding Gear
TypeMORE POWER
26 to 1 in low.
In our new type
"CT"*"It will pull like
everything."*

This transmission has three speeds forward and one reverse and replaces the regular Ford transmission, drums, bands and all. The low gear is lower than the Ford, therefore more power, third is the same as the Ford and second is halfway between. It is ruggedly built with oversize alloy steel gears. Multiple disc clutch. Foot brake on jack shaft. Hyatt Roller Bearings. Installation easy, no cutting or machining.

E. D. & A. F. CRONK, Inc., 140 Hotel St., Utica, N. Y.

PAROB EXPANSION HAND REAMERBLADES CUT AT
DIFFERENT ANGLES

Each successive blade cuts AT A DIFFER-
ENT ANGLE
from the one
before it.

No CHATTER,
no DIGGING IN—
even in keyed holes.

TWICE the expansion of others. All sizes. Money-back guarantee.

Ask about the GAMMONS TAPER PIN REAMER—Wonderful Time-saver.

THE GAMMONS-HOLMAN CO.

Dept. C.

Manchester, Conn.

**Re-Babbitted Bearing Exchange**

Our Re-babbitted Bearing Department is over two years old. Over 200,000 Con. Rods have been shipped. Less than one to each 2,000 have been returned as faulty. We have over 5,000 SATISFIED DEALERS in 16 States. We Re-babbitt ANY Bearing that has ever been Babbitted. Special undersize for Re-ground crankshafts 10 per cent extra. A few of our LOW RETAIL PRICES are:—Marmon and Studebaker \$4.00. Chalmers and Moline Tractor \$3.50. Buick and Maxwell \$3.00. Oakland and Olds \$2.50. Fordson and Dodge \$2.00. Fords 60c each. Liberal Discounts to Dealers and Garages. We pay Transportation one way. RUSH Orders shipped same day order received. Satisfaction guaranteed.

Fremont Foundry & Bearing Works
1340 W. 5th St., Oklahoma City, U. S. A.**PROTECTOMOTOR**

REG. U. S. PAT. OFF.

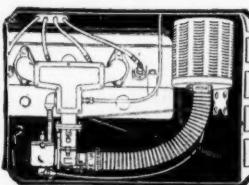
Perfect Positive Protection

Dealers sell more cars to prospects who come to them through the recommendation of satisfied owners than salesmen "dig" up. By eliminating engine trouble and enabling a car to run three to five times as many miles without attention, Protectomotor makes every owner a booster for the car he buys from you.

Write today and let us submit proof.

Staynew Filter Corporation
Rochester, N. Y.

Perfect, Positive Protection

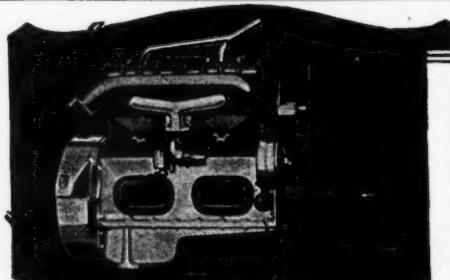
**We'll Help You Make 1924
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The Dragon franchise gives you a real quality battery, exclusive territory, generous discounts—and effective selling helps. Get our 1924 agency proposition now.

Write or wire

ENGLERT MANUFACTURING CO.
Pittsburgh, Pa.

Dragon Storage Battery

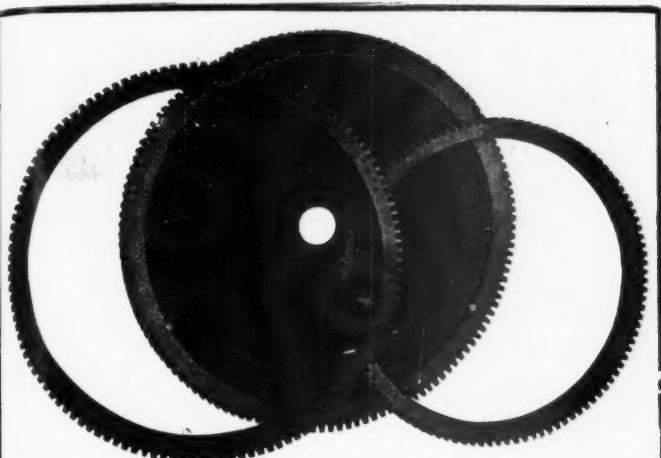
**A Remarkable Achievement**

Keen minds con-
ceived the new Wau-
kesha Bus and Truck
Motor. The **utmost**
in heavy duty motors.
Equipped with
Ricardo Cylinder
Head.

Write for full details.

THE WAUKESHA
MOTOR CO.
Waukesha, Wis.

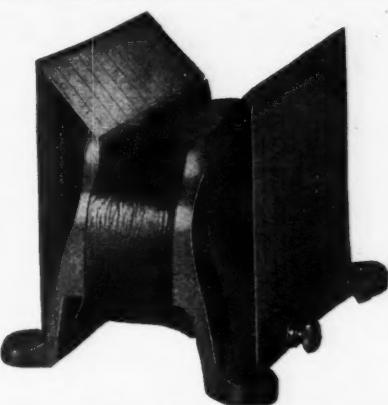
WAUKESHA
TRADE MARK
BUS and TRUCK MOTORS



New Low Prices On Fly Wheel Rings

Increased quantity production has enabled us to get out a new and lower price list on Meachem Steel Gear Rings for Fly Wheels. Also our trade discounts have been increased to more than offset the lower list prices. Write us for the new list and discounts.

The Meachem Gear Corp'n.
Ring Dept.
Syracuse, N. Y.



This Growler Costs But \$4.50

With it you can tell in ten seconds whether an armature is in good condition. If it is not, you are saved all the grief of having to do the whole job over, losing all your profit and the customers' goodwill besides. Operates on 110 Volt A. C. Current.

Sold direct or through your jobber. Resale price \$4.50 in Central and Eastern States, \$5.00 in Pacific States. Your check for above amounts plus twenty-five cents postage brings this moneymaker to you.

ARMATURES: We rewind any and all kinds of GENERATOR, MOTOR and MAGNETO armatures, and reship same day old armatures received.

FORD GENERATOR AND MOTOR ARMATURES	\$4.50
ALL SMALL DOUBLE UNIT GENERATOR AND M	5.00
ARMATURES	10.00
SINGLE UNIT MOTOR GENERATOR ARM	\$3.75 to \$4.75
MAGNETO ARMATURES	

Armature Rewinding Co., Inc.
3301 Washington Blvd., St. Louis, Mo.



For replacement work after a reboore or re-grind job insures your customer as good if not a better job than the original assembly.

Dall Pistons are simply GOOD Pistons, made to manufacturer's specifications, sometimes more refined in design and lighter in weight, but always as carefully made and inspected as though they had to pass the most rigid inspection of a Motor Manufacturer.

Dall Pistons are regularly furnished in standard and various oversizes, also semi-finished 1/16 oversize.

Write today for price list and delivery schedule on all items. Distributors at various points will take care of your requirements.

THE DALL MOTOR PARTS COMPANY

Post Office Station D, Cleveland, Ohio
Southwestern Branch
THE CARROLL CO.
2218 S. Harwood St., Dallas, Texas



Test These Battery Plates at Our Risk—

Beat competition to these improved plates

We want you to test Continental Dehydro Plates and see for yourself just how great an improvement they are over ordinary plates and what an advantage their use gives you over your competitors. We know that the new process by which they are made gives them 25% greater capacity and 30% longer life. But we want you to see for yourself. Don't take our word for it; try them—make your own tests, convince yourself.

SPECIAL OFFER—Enough for Battery

We will send you on trial 18 negative and 15 positive plates—enough for one 33-plate battery. Try them. If, after 30 days, they have not lived up to our claims, return them and we will refund your money without argument and without delay. The price is \$5.00, shipping charges prepaid. You take no risk in trying out the first basic improvement made in battery plates in 40 years. SEND THE COUPON NOW.

CONTINENTAL BATTERY CO.,
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St. Louis, Missouri.

CONTINENTAL BATTERY CO., 3201-19 Papin St., St. Louis, Mo.
Gentlemen: I am willing to try your Dehydro Plates. I am enclosing \$5.00 (you pay transportation) for enough standard size plates to make one 33 plate battery. If I am not satisfied, you are to refund my money in full upon return of the plates.

Name

Address

My Jobber is

Get a Manley Portable Work Bench



partitions seasoned wood, roller bearing casters, and provision made for locking wheels. Made in two sizes.

MANLEY MFG. CO.

YORK, PA

JOHNSON Combination Bench Furnace

Does not require a Forced Air Blast

For heat-treating tools, gears, small parts, etc. The doors in the side of the hood enable the heating of long rods, axles or the sweating of joints. Will heat soldering coppers in the largest sizes, or melt 25 lbs. of soft metal, such as lead, babbitt, solder, tin, etc.

Send for our complete catalog of Gas Appliances



No. 118 Bench Furnace

JOHNSON GAS APPLIANCE CO.

New York Office: 277 La Fayette St.

POSITIVE WATER CIRCULATION For Fords Keeps them cool in Summer—A Winter Necessity

"CIRQUELEX"

The only pump that seals water from bearing Pumps 12 gallons water per minute at 18 M.P.H. Price—complete with belt—\$3.90.
PRICE BROS., Inc. Frederick, Md.
Western Representative: Roland S. Borenau, 600 Metropolitan Bldg., Los Angeles, Calif.
Central Representative: Hal Taylor Co., 1523 Republic Bldg., Chicago



HOESS

The Humanized Ring

Combines the simplicity of the one-piece ring with the snug fit and oil-scraping ability of more complicated designs. Good profit and fine results. Write for prices and discounts.

HOESS BROTHERS

State & Jessie Hammond, Ind.

ARE YOU LOOKING FOR A REAL BARGAIN?

Watch the classified advertising columns of MOTOR AGE and you'll see many of them. Often a man has goods for quick disposal and he announces the fact here. Whether or not you are in the market right now for certain things you will find it pays to look over the classified ads every time you receive your copy of the paper. It's a good habit to get into and some day you'll be mighty glad of it.

Get the Habit—

READ THE CLASSIFIED ADS IN MOTOR AGE



BOWSER

ESTABLISHED 1885

ACCURATE MEASURING PUMPS

S. F. Bowser & Co., Inc.

Home Plant, Fort Wayne, Indiana

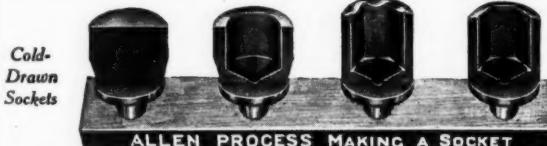


Noiseless Timing Gears

Install quietness — Cloyes NOISELESS Timing Gears. They give the motor a soft, even "purr"—permanently.

Cloyes Gear Works
1614 Collamer Ave., Cleveland, O.

Sales Representatives
United Autoware Co., Fish Bldg., New York City
N. Lowenthal, Box 952, Ft. Worth, Texas



ALLEN
Wrench
Sets

The Allen Manufacturing Company, Hartford, Conn.

We Make RADIATOR CORE EQUIPMENT

For the Complete Manufacture of
RADIATOR CORES

Ask Us About This Equipment
We make the best radiator test plug.

RADIATOR ENGINEERING CO.
626 Nesslewood Ave. Toledo, Ohio

A POST CARD WILL BRING YOU FULL DETAILS ABOUT THE WONDERFUL

New AIR CONTROL
M.P.C. Pneumatic Accelerator *for Fords*
MOTOR PRODUCTS CORP. DETROIT, MICHIGAN



—the Solution of the
used car problem!



Percy Chamberlain Associates
1320 Book Bldg., Detroit



Cyclo "Dynamic" Hot-Spot for Fords

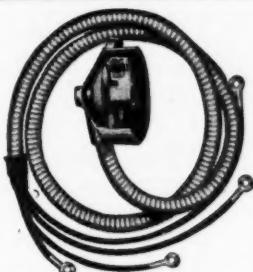
This "Modified Vapor" manifold gives a gas with lots of "kick" in it for hill-climbing — exceptionally smooth running and economical at all seasons. Vacuum control varies the heating inversely with the load.

The best permanent proposition for dealers.

CYCLO MANIFOLD CO.

High & Chestnut, Akron, Ohio

LINCOLN
FOR ALL CARS—\$15 to \$36
SHOCK ABSORBERS



TURNER 2 IN 1 TIMER

Has stood repeated and rigid tests and has proven a genuine quality article and a boon to every Ford owner. Increases power, insures an instant start in all weather, lessens fouling of two front plugs, saves gasoline, and stops motor "kicking." Is oil, grease and water proof. Requires no oiling and is easily installed. Price complete \$3.60.

TURNER MANUFACTURING CO.

KOKOMO, INDIANA
Export Office: 175-177 Greene St., New York City, U. S. A.



Diogenes

Diogenes, a Greek Philosopher, used to walk the streets of Athens 2300 years ago with a lantern in his hand. On inquiry as to what he was looking for he used to say, "I'm looking for an honest man." Through the ages his remark has been used as an example of humor and pessimistic futility. Were he alive today he'd find his honest man in the old Anchor Bulb-maker. And with an Anchor Bulb other honest men, which his old lantern missed, would be revealed to him. For buyers who are groping in the dark for an honest light at a low price we recommend

ANCHOR AUTO BULBS

"Triple-Tested" "Never Bested"
Anchor Electric Company
553 West Jackson Blvd., Chicago, Ill.

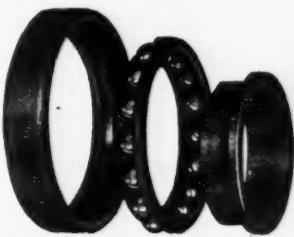


A complete substitute for dangerous acids, Zinc-Chloride, Sal-ammoniac and other mixtures commonly used as a Flux. Rubyfluid is quick acting, anti-rusting and is always ready for instant use. Ruby users include the foremost industries of the country.

Send for generous Free Sample.

THE RUBY CHEMICAL CO.

68-70 McDowell St. Columbus, O.



The Bearings Company of America, Lancaster, Penna. Angular Contact Thrust Bearings. Angular Contact Radial Bearings. Manufacturers of Thrust Ball Bearings of all types. Let our Engineers help to solve your Bearing problems.

The Bearings Company of America,
Lancaster, Penna.

Detroit, Mich., Office,
1012 Ford Bldg.



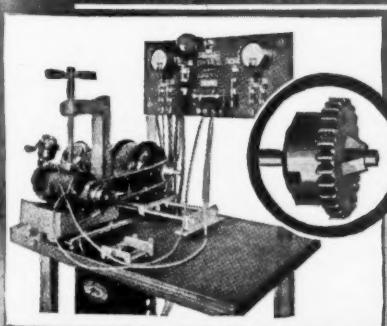
Franklin The Super Single Stage Air Compressor

Has no complicated devices, no fancy accessories, no unnecessary parts. Everything strong, durable, with a specially designed compressor having super-cooling spiral cylinder fins. The patented Unloader saves electricity and cuts down repair bills. Standard replacement parts. Order today from your jobber or write for full particulars. \$225 f. o. b. Norristown.

FRANKLIN AIR COMPRESSOR WORKS

2604 Main Street, Norristown, Penna.

EXCELSIOR TEST BENCH *With the Positive Drive and Speed Control*



INCREASE YOUR PROFITS!

Starting, lighting and ignition pays bigger profits than any other branch of automotive service.

**The Excelsior
Test Bench**
equips your shop complete for this work.

Price \$385.00
Payable \$50 per month
Write for bulletin 975M

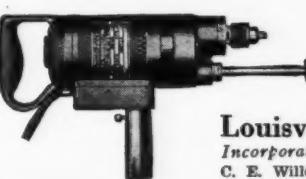
WEIDENHOFF

4350 ROOSEVELT ROAD
CHICAGO, ILL., U.S.A.

Get This "Pioneer" \$65 Garage Special

Electric Drill

and Valve Grinder



Greatest time and money saver,
as well as money maker, for
your shop—

"It Will Do The Work"

Louisville Electric Mfg. Co.
Incorporated Louisville, Ky., U. S. A.
C. E. Willey, Pres. J. B. McFerran, Secy.-Treas.

INSURES A TOW HOME



BASLINE AUTOWLINE

12-196

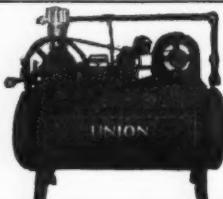


One Dealer Sells 125 in One Month
Similar reports about the Optoshield are coming in constantly from all parts of the country. This accessory has taken its place among the most popular sellers in recent years.

THE OPTOSHIELD

Fits any windshield. Made of sapphire blue scientifically made optical glass. Driver looks through it and is relieved of all eye strain from oncoming head lights, sun glare, snow glare and road glare. Price \$3.50. Territorial distributors, dealers and agents wanted.

Detro Sales Service Co., 1647 Penobscot Bldg., Detroit, Mich.



For Unusual Service

Union Air Compressor, Union for Service, Union for Strength, Union for Reliability. Built by Union Equipment Co., Butler, Pa. The best machine on the market for the money.

Union Equipment Company
Butler, Penn.



KING QUALITY

ALL THE NAME IMPLIES

STEERING KNUCKLE BOLTS AND BUSHINGS
PISTON PINS, PISTON PIN SET SCREWS

Automotive Division

KING SEWING MACHINE CO.
BUFFALO, N.Y. BRIDGEBURG, ONT., CAN.



\$700 Profit in One Month

That's what one distributor made. He's only one of many doing a big business. Dealers, too, are making sales by the dozens. Few accessories in recent years have been as popular as the

DUPLEX

Second Spare Tire Carrier & Rim Tool
Carries spare tire—also expands and contracts rim when changing tires. Two tools for the price of one. Write for details.

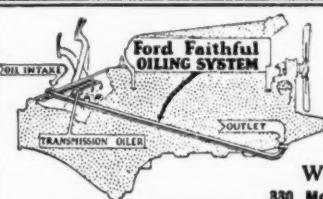
TRIPP-SECORD & CO.
606 Kerr Bldg., Detroit, Mich.



IT'S EASY TO SELL

"The only oil ring with a mileage guarantee"

"Sav-Oil" is stamped on bottom of every ring
The Sav-Oil Ring Mfg. Co.
1037 S. Figueroa St., Los Angeles



SAVES REPAIR BILLS

The recent addition of a special transmission oiling unit makes the FORD FAITHFUL Oiling System a most efficient eliminator of all lubricating troubles. Dealers Write

W. O. Thompson Mfg. Co.
330 Mountain View St. Pasadena, Cal.

DON'T

Turn Down a Rewind Job
Send it to us. We are "Armature Winding Specialists."

Profit for you in our service—Ford generator armature rewound—\$1.95. Other prices in proportion. All work guaranteed. Write for catalog and prices on all generators.

H. M. FREDERICKS CO.,

Lock Haven, Pa.



INCREASE YOUR PROFITS!

HB 8-Hour Constant Potential Battery Charging doubles your present income. Lowers charging cost, saves one-half on labor, one-half on rental batteries needed. Patented HB Voltage Regulating Winding eliminates reversing. \$20 monthly pays for outfit. 30 days' free trial. Write for information.

HOBART BROS. CO., Box AR 524 TROY, O.



Curtis Pneumatic
Machinery Co.

1527 Kienlen Ave.
St. Louis, Mo.



Do Cushions Need Grease?

Car owners agree that they do not. They prove it by taking their business to the shop which keeps the grease off the cushions. KleenKar shop covers guard against greasy cushions, steering wheels, and scratched paint. They cost little, last years, pay for themselves in a season. Send for samples.

Automotive Fabric Equipment Co.
703 Cass St. Milwaukee, Wis.

WEL-EVER OIL CONTROL PISTON RINGS

Write for interesting circular on oil pumping and details about this fast selling piston ring.

THE WELEVER PISTON RING CO.
1713-15 Canton St. Toledo, Ohio

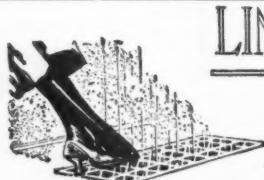
Less Oil and Gas—from WEL-EVER equipped units. Its oil control feature is guaranteed to stop oil pumping, prevent spark plug fouling and reduce carbon formation.

Attractive in appearance, with cleaning features of removable heating coil with no connecting joints inside the heater pan to leak. Meets instant approval. No odor or noise. Easily installed and operated. Will boost your winter sales—get our attractive trade proposition.

THE NORWALK AUTO PARTS CO.
Norwalk, Ohio



"Good for Twenty Years at Hard Labor"
BRUNNER MFG. CO., UTICA, N. Y.



LINENDOLL EXHAUST HEATER

Attractive in appearance, with cleaning features of removable heating coil with no connecting joints inside the heater pan to leak. Meets instant approval. No odor or noise. Easily installed and operated. Will boost your winter sales—get our attractive trade proposition.

THE NORWALK AUTO PARTS CO.
Norwalk, Ohio



flatlite

A reflector—not a lens. Greatest dealer opportunity ever offered. Sold either as complete headlamp or simply as a reflector to be inserted in lamps now in use. Write.

THE AMERICAN FLATLITE CO., Cincinnati, Ohio



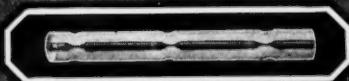
Bumpers for all Cars

The Price and
Quality Satisfy

Complete Catalog on Request
GEMCO MANUFACTURING CO. 760 So. Pierce St., Milwaukee, Wis.

KESTER Acid-Core WIRE SOLDER

"REQUIRES
ONLY
HEAT"



SAMPLE
FREE

CHICAGO SOLDER CO., 4201 Wrightwood Ave.

Write—and find out how
WATSON
STABILATORS



Real High Tension Ignition for Ford Cars

An advertisement for front-wheel brakes. On the left is a black and white photograph of a circular drum brake assembly, showing the outer housing and internal components. To the right of the image, the text reads: "Front-Wheel Brakes supplied for ANY MAKE of car. Easily installed. Golden repair opportunity. Write for price list and BIG DISCOUNT. Green Engineering Co., Dayton, O."

An advertisement for Milwaukee Die Casting Co. It features a large, stylized letter 'M' on the left, composed of a vertical bar and a curved section with horizontal lines. To the right of the 'M', the words "In Stock" are written in a large, bold, serif font, with a diagonal line through the 'I'. Below "In Stock", the words "Not Over a Day Away" are written in a cursive, italicized font. At the bottom, the company name "MILWAUKEE BEARINGS" is written in a bold, sans-serif font, flanked by two small illustrations of a bear's head.

Kawneer

SOLID COPPER
STORE FRONTS

Write for Special Book Garage Fronts
THE KAWNEER CO., 1219 Front St., Niles, Mich.



EVERYDAY PISTON RINGS

Patented Non-leakable joint. Quick seating and self-adjusting to cylinder wear.

Write for particulars

ROYAL PISTON RING CO., Inc. Bath, N. Y.



JACOBS CHUCKS INSURE ACCURATE DRILLING

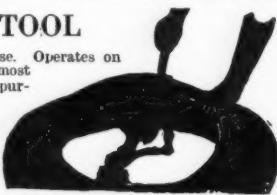
Write for circular, "A Jacobs Chuck for Every Purpose."

THE JACOBS MANUFACTURING CO.
Hartford, Conn.

THE PACIFIC RIM TOOL

Handles any size or type of split rim with ease. Operates on the principle of the jackscrew which is the most powerful means of leverage. If unable to purchase from your jobber, write us.

PACIFIC RIM TOOL COMPANY
2337—11th Ave., N. Seattle, Wash.
16604 Waterloo Rd., Cleveland, O.



E-Z SPRING



FOR FORD CARS

Makes riding and driving a pleasure. Eliminates road shocks and hard steering, spring breakage, shock absorbers. Write for our money making dealer proposition.

W. D. LOWE & CO. 204 Mound St., Columbus, Ohio



Better than a new flywheel

"Saves Money—Saves Delay"
For every American Car and Truck

EXCELSIOR STEEL RING GEARS

SPRINGFIELD MFG. CO.
Springfield, Ohio

DILL INSTANT-ONS

Dust and Valve Cap
Off or On in 5 Seconds

The Dill Manufacturing Co. Cleveland, O.



MONOGRAM *The* Self Locking Radiator Cap



Take a Tip From Buick

AFTER testing for 8 months under actual service, Buick engineers have recommended the HALL CYLINDER HONE for use in all their branches.

Your jobber will supply you.

The Hall Cylinder Hone Company
435 Dorr St., Toledo, Ohio

ALVORD QUALITY TOOLS



Taps, Dies, Cutters, Drills, Reamers

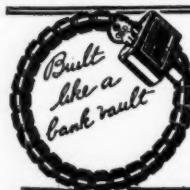
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ALVORD REAMER & TOOL COMPANY
Millersburg, Pa.

The new

HOLLEY HOT SHOT

for Ford cars



Johnson SPARE TIRE LOCK

Made by

JOHNSON AUTOMOBILE LOCK CO.
DEPT B, ST. LOUIS, U. S. A.

CARTER OIL GAUGES

For Ford, Chevrolet and Dodge—Only \$3.75
Buick, Oakland and Chandler—\$5.00



ACCURATE—EASY TO INSTALL—GUARANTEED

Screw gauge to dash or instrument board; connect copper tube with elbow in place of lower petcock. No oil passes thru tube or gauge. No moving parts, floats or plungers.

Easy to sell; easy to install. Big money-makers.

Order from your jobber or write for discounts.

Carter Motor Accessories, Inc., 388 Pearl St., Buffalo, N. Y.

GATES VULCO

Fan Belts and Radiator Hose

Made By

The World's Largest Makers of Fan Belts



UNIVERSAL HOSE CLAMP

Adjustable. Two sizes will clamp any hose of any diameter. Made from cold rolled steel out of wire. No rough edges to cut hose. Put on in less than a minute. Everlastingly leak-proof. Order Universal Hose Clamps. Trademark on every clamp and carton. Get them from your jobber—or write us.

UNIVERSAL INDUSTRIAL CORP.

Hackensack, N. J.

GARDNER

Motor Car

Send Us Your Armature Repair Work

FORD ARMATURES REWOUND \$2.00

MOST ANY TWO UNIT GENERATOR ARMATURE \$5.00

ALL WORK GUARANTEED—WRITE FOR PRICE LIST
U. S. AUTO SUPPLY CO., 3845-49 S. WABASH AVE., CHICAGO

(2408)

Strom

BALL BEARINGS

U. S. BALL BEARING MFG. CO., 4551 Palmer St., Chicago, Ill.

All types and sizes of radial (single and double row), thrust, and angular contact bearings, for new or replacement work.

QUALITY—PROFIT—TURNOVER

American Hammered Piston Rings

American Hammered Piston Ring Company
Baltimore, Maryland

Barty Parts Make a Better Axle

they act as a differential semi-lock which makes your axle essentially a solid axle on straightaways and allows the differential to function at the turns. Simple, easily installed. Get the details.

BARTY AXLE CORP.
Syracuse, N. Y.

**B A R T Y
C O N T R O L
P A R T S**

140 Combinations—all in this ONE set

Everything you need, in one small box, compact, accessible, and a real mechanic's outfit. Sockets will not break. Fully guaranteed. Ask your dealer or write us.

The Eastern Machine Screw Corp.
10-20 Barclay Street, New Haven, Conn.

PETERSEN
Guaranteed HALF INCH ELECTRIC DRILL

\$50 110 VOLT

So powerful that the combined strength of three men could not "stall" it when drilling $\frac{1}{2}$ " holes in steel. Write for miniature catalog describing the complete line of Petersen Portable Electric Tools.

A. H. PETERSEN MFG. CO., 1616-24 Fratney, MILWAUKEE

KISSEL
The Custom Built Car

The Aristocrats of Motordom
7 Models—Open and Closed Distributors in principal cities. Open territory now being closed.
Kissel Motor Car Co.
Hartford, Wis.

THE QUINCY SILENT AIR-MASTER
The Most Air Per Dollar Cost
WALL PUMP & COMPRESSOR CO.
Quincy, Ill., U. S. A.

Biflex
Cushion Bumper
for every car

"PROTECTION WITH DISTINCTION"
THE BIFLEX CORPORATION, Waukegan, Ill.

COLONIAL CYLINDER HONES
\$17.50 PRICES REDUCED ONE-HALF \$17.50

You can now buy the Colonial Cylinder Hone, an approved tool for this class of work and one of the best Hones on the market at \$17.50 each F. O. B. Kalamazoo. Made in three sizes, one, two and three. No. 1 $2\frac{1}{4}$ " to $3\frac{1}{4}$ ", No. 2 $3\frac{1}{4}$ " to $3\frac{3}{4}$ ", bore, No. 3 $3\frac{3}{4}$ " to $4\frac{1}{4}$ ". Colonial Cylinder Hones are now being used by some of the best factory Service Stations in the country as well as by numerous Service Station Owners.

Colonial Gear & Manufacturing Co., Kalamazoo, Mich.

PERMANITE
Transmission Lining for Fords
never loses its firm,
velvety grip.

The Rossendale-Reedaway
Belting & Hose Company
NEWARK N. J.

SPENCER

Should Be On Every Car You Sell

The Spencer Mfg. Co.
Spencer Ohio

The Spencer Lock Tilting Steering Wheel first adds comfort in the driver's seat then protects the car from theft. And the insurance it saves pays back the purchase price. Ask your jobber for details. Made for Ford, Dodge, Overland, Chevrolet 490 and Superior, Maxwell, Star and Gray Cars.

GIANT LICENSE PLATE HOLDERS

When you lose a license plate the cost is from \$2.50 to \$5.00. With Giant license plate holders you need not fear losing your license plate as they are fastened permanently to the holders and can be installed in one minute's time. Guaranteed to give perfect satisfaction or money refunded. If your jobber cannot supply you, write us direct.

RED GIANT TOOL CORP., Lynchburg, Va.

THREE PRODUCTS YOU NEED

ZIP FRICTION PASTE, for fitting in bearings.
ZIP GRINDING COMPOUND, for valves.
ZIP LAPING COMPOUND, for lapping in pistons.

The Original Water Mixed. THE ZIP ABRASIVE COMPANY Cleveland, O. U. S. Pat. 1353197

Ask Your Jobber.
THE ZIP MFG. CO. Denver, Col.

Lorentzen Headlight Kontrol
AN AUTOMOTIVE NECESSITY THAT SELLS
LORENTZEN HEADLIGHT KONTROL, INC.
60 Grand St.—New York City.

Thirty-seven BRANCHES
AHLBERG BEARING COMPANY
321 EAST TWENTY NINTH STREET, CHICAGO ILLINOIS



ECONOMY MOTORS—HIGHLY DEVELOPED
LYCOMING MOTORS CORP., WILLIAMSPORT, PA.

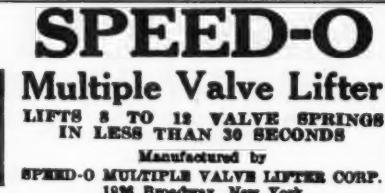


Insist that your Portable Electric Drills be equipped with ALMOND "Straight Line" CHUCKS. The well known Almond Chucks have been a standard for years.

T. R. ALMOND MFG. CO.
ASHBURNHAM MASS.



Patented Oct. 30, 1923



Motorex EQUIPMENT To Help You Sell *Motorex*

WRITE FOR INFORMATION ABOUT
THE SALESMAN'S WORK BOOK

SALES EQUIPMENT COMPANY
5961-B Woodward Avenue Detroit Michigan

REG. U. S. PAT. OFF.
TESTBESTOS
AUTOMOBILE
BRAKE LINING

AMERICAN ASBESTOS CO., NORRISTOWN, PA.



UNIVERSAL

2 rings that cover every need

Ground or turned finish
Attractive jobber's proposition

UNIVERSAL MACHINE CO.
BALTIMORE, MD.



Relio, an electric-drive wet grinder for pistons, pins, valves, bushings. \$475.00.
Valvo, an electric-drive bench grinder for valves, valve-seat reamers \$175. See page ads this paper.

Van Norman Machine Tool Co.
Springfield, Mass.

Six design and style bumpers from which to make selection for all popular make cars

Write for details.
THE BELLEVUE MFG. CO.
Bellevue, Ohio



The Cincinnati
Electric Drills-Grinders-Busters

A tool for every purpose. Long service makes them cost the least.
The Cincinnati Electrical
Tool Co.
1515 Freeman Ave., Cincinnati, O.

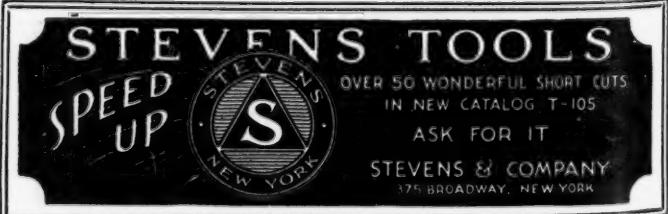


We can prove to any automobile dealer that there's money in selling Vesta Batteries and there's no "grief." We say we can prove it. Ask us to do it.

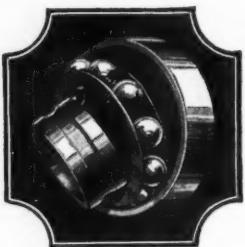
Vesta Battery Corporation Chicago, Ill., U. S. A.

→ "CONNEAUT" ←
Plastic Metallic Packing

Patented
Stops the leaks in automobile water pumps. Mold it with your fingers. Makes a smooth metal bearing—adjustable and practically frictionless. At your Jobbers—Get it today. It does the trick. Put up in 1 lb. cans. If your Jobber doesn't carry it, write us direct. Price \$1.65 per pound, f. o. b. Conneaut, Ohio.
The Conneaut Packing Company Conneaut, Ohio



"NORMA"
PRECISION
BALL BEARINGS



Internationally recognized as
the standard bearings for
ignition apparatus and
lighting generators

**THE NORMA COMPANY
OF AMERICA**

Anable Avenue
Long Island City New York
BALL, ROLLER AND THRUST BEARINGS

An Investment for Profit

The new Snap-on Cabinet is the best money-maker you can put in your store. A complete wrench department in small space at surprisingly small cost. Sell anything from single handles and sockets to Kits selected for customer's car. Write for details.

MOTOR TOOL SPECIALTY CO.

14 E. Jackson Blvd., Chicago

SNAP-ON WRENCH CO., Mfrs.

Milwaukee, Wisconsin

Snap-on
INTERCHANGEABLE
Socket Wrenches

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Any Old Grinding Compound Will Grind a Valve

But

***There is just one that will do it QUICKEST.
There is just one that will do it SMOOTHEST.***

They are both the same compound!

It Is

Peep WATER-MIXED

Send for a FREE SAMPLE of PEP water-mixed grinding paste and see just how much better and faster it works than the out-of-date grease-mixed compound. You'll find out that ***GREASE CAN'T HELP GRIND A VALVE ANY MORE THAN IT CAN HELP GRIND AN AXE ON A GRINDSTONE.***

Mail this coupon now, before you turn the page.
To PEP MFG. CO., Inc.
33 W. 42nd St., New York
Check free samples. Write name and address
in margin and address in pencil
PEP Bearing Compound
Write name and address
in margin and address in pencil
M.A. 2

The *New* Kokomo CRUSADER

A Moderate Priced Cord



The NEW Kokomo Crusader definitely fills the need for a really good cord tire at a moderate price.

Crusader is a big, oversize cord, sturdy in construction. It's a handsome tire—all black with a distinctive tread.

And you can sell Crusader at prices but slightly higher than fabrics!

Write today and let us tell you how Crusader will meet your demand for lower priced cords.

KOKOMO RUBBER CO., KOKOMO, INDIANA



LONG-LIFE
KOKOMO
TIRES AND TUBES



The Sign of the Genuine

Watch Stutz GROW *-Everywhere!*

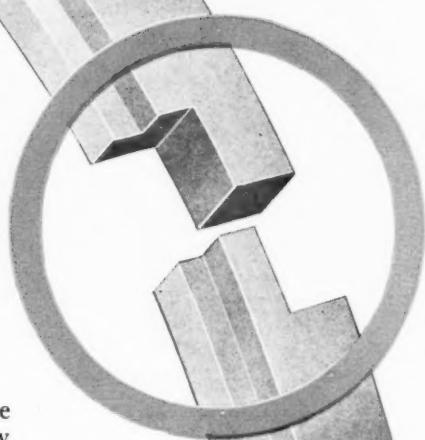
Write for Particulars About the Stutz Franchise
and the Greater Stutz Line for 1924

STUTZ MOTOR CAR COMPANY of AMERICA, Inc., Indianapolis, Indiana
Builders of the Original and Genuine Stutz Motor Cars

STUTZ SIXES

Special Oil-Wiper Piston Ring A Gill Product

50¢



In cases of oil pumping engines particularly, the Special Oil-Wiper Ring has proved exceptionally efficient. The distribution of oil on the cylinder walls is perfectly controlled by the special shoulder which returns all excess oil to the crankcase.

For maximum compression and perfect oil distribution use Gill Inter-Locking Joint and Special Oil-Wiper Piston Rings on each piston.

Special Oil-Wiper Rings are individually cast from finest quality close-grain grey iron. They are lathe turned to permit rapid and even seating in the motor. Like all Gill Rings they are cast out of round to insure a permanent and even wall tension. Price 50c up to and including 4 in.

75¢



Gill

Gill Inter-Locking Joint Rings are acknowledged leaders in the patented ring field. The Inter-Locking Joint prevents leakage of gas or oil and loss of compression. Price 75c up to and including 4".

Servus

Servus Step-Cut Rings meet the demand for a step-cut ring at a comparatively low price. You will find this ring to be exceptionally well-made. Price 30c up to and including 4".

30¢



Gill Pins

Manufactured and carefully inspected to hold tolerances to a minimum. Accurately machined from solid bar stock. Conform strictly to motor manufacturers' designs and steel specifications.



Gill products are handled by jobbers and dealers everywhere and 24 Gill branches, with complete service stocks, conveniently located throughout the United States and Canada.

GILL MANUFACTURING CO.
8300 South Chicago Ave., Chicago, Ill.

